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ABSTRACT

This paper outlines an alternative desegregation plan that would replace the one implemented in the East Baton Rouge Parish (Louisiana) School District in 1981. Known as the Incentives Desegregation Plan, the alternative plan was designed to produce interracial contact comparable to the earlier plan, without incurring the attendant costs of mandatory reassignment. First, the means of measuring interracial contact are described, and then applied to the current plan. Despite substantial white flight, the current plan produces greater interracial exposure than existed previously. Next, the alternative plan's reliance on court-ordered school closings, majority to minority transfers, and magnet schools is explained. Procedures for implementation (a 3-year process) and specific magnet programs are described. The proposed locations, grade levels, staff, participants, programs, and costs of 15 magnet schools are presented and a plea is made for heavy reliance on team learning, described as being extremely effective in stimulating achievement gains. Total enrollment and costs of magnets are projected and a scheme for estimating the net benefit of the current and the alternative plan is presented. Next, implementation procedures are explained, first generally and then on a school-by-school level. The report concludes with a detailed timetable for implementation and a set of criteria for assessing the success of a magnet school. Fourteen statistical tables (most containing racial enrollment data) are included and appendices provide data on attendance zones, maps of the district, and 78 pages of information on student team learning. (KH)

A SCHOOL DESEGREGATION PLAN FOR EAST BATON ROUGE PARISH

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PREFACE

The analysis presented here substantiates what virtually all of the research on school desegregation has found -- that the mandatory reassignment of white students to formerly black schools produces significant white flight. Almost 60% of the white students reassigned to schools formerly at or above 90% black under the current court-ordered plan did not show up at the school they were assigned to, and almost half of the school district's white enrollment loss in the last 3 years is due to desegregation. There was, by contrast, no discernible black flight at the district level. As a result of these racial differences in loss rates, the "busing burden" is now greater for blacks than whites under the court's plan.

The plan proposed here is an attempt to slow the trend towards resegregation and to reduce the mandatory reassignment burden. It is definitely not a return to the status quo before court-ordered desegregation. Rather, this Incentives Plan offers a substantial degree of interracial contact by using court-ordered school closings, majority to minority transfers, and magnet schools. It is an attempt to link the research findings on the determinants of educational achievement with the goal of desegregating schools. It minimizes disruption and uncertainty because: 1) it is phased in over a period of three years, with portions of the current Court-ordered plan remaining in place temporarily and 2) it contemplates a programmed phasing out of mandatory student assignments as the magnet schools become established as viable desegregating tools. The implementation schedule contemplates residential attendance zones at the middle school, elementary school and high school levels, at the beginning of, respectively, the 1985, 1986 and 1987 school years.

Ultimately, the proposed plan will produce less white flight than a plan based upon mandatory reassignments. It will produce over the long term either somewhat more or somewhat less interracial contact than the court's plan without the additional costs -- parental hostility to mandatory reassignment, parental difficulty in visiting their child's school, and diminished community support for public education -- associated with mandatory reassignment.

When this plan is fully implemented, it will initially leave more one-race schools than the court's plan, but such definitions can be somewhat arbitrary and obscure long-term trends which may be more indicative of the extent of actual desegregation. There is, of course, no guarantee that this plan will produce the level of interracial exposure that is predicted, but this risk is there regardless of which plan is chosen. The court's plan could produce less interracial contact than is pre-

dicted because of white flight while this plan could do so because of less effort on the part of the school board than is assumed, or unrealistic expectations of student volunteering.

There are, unfortunately, always uncertainties in policy analysis and policy making. This plan, however, addresses the need to ameliorate the often divisive and counterproductive remedies of the past with a new and innovative approach to school desegregation. As such, it merits the court's acceptance.

INTRODUCTION

This proposal for an alternative desegregation plan for the East Baton Rouge Parish School District is useful to the court if it can produce interracial contact comparable to the plan ordered into effect in Fall 1981 and completed in Fall 1982 without incurring the attendant costs of mandatory reassignment. First, it is important to understand how interracial contact is measured and how it can be used to assess the utility of alternative desegregation plans.

One example of a constitutionally acceptable plan may be that which approximates in each school the racial composition of the whole school system. That is, if a school district is 42 percent black and 58 percent white (as East Baton Rouge was in 1980), every school should be 42 percent black and 58 percent white. Such a criterion, however, ignores the white flight "costs" of mandatory school desegregation, costs which are critical to the achievement of school desegregation. If there are no whites left in a school system, there is no school desegregation regardless of how much racial balancing was originally produced on paper.

Nevertheless, considering only these "costs", as many individuals and social scientists have done, is not only constitutionally unacceptable, but senseless from a "policy analysis" perspective. Virtually all policies have costs and if one were to consider only costs, none would ever be adopted since doing nothing always has the least costs. Similarly, if one were to consider only white flight costs, the desegregation alternative chosen would always be "do nothing" since that always produces the least white flight. Therefore, from both a constitutional standard and a policy analysis standard, one must consider both costs and benefits in order to determine the net benefit of school desegregation plans.

Indeed, if we consider the desirability of possible outcomes of any particular school desegregation plan, it appears that virtually everyone who supports the principle of school desegregation uses net benefit as a guide to ranking them. This becomes clearer if we consider a hypothetical segregated school system with six schools and the racial composition shown below.

Blacks	Whites
100	0
100	0
100	0
0	100
0	100
0	100

Virtually all supporters of school desegregation would prefer a plan which produced Outcome A (shown below), with considerable racial balance and 265 white students remaining, to a plan which produced Outcome B with perfect racial balance and 5 white students remaining.

Outcome A

Blacks	Whites
50	40
50	45
50	45
50	45
50	45
50	45

Outcome B

Blacks	Whites
50	1
50	1
50	1
50	1
50	1
50	1

Although Outcome B produces greater racial balance, Outcome A yields much greater interracial exposure (proportion white in the average black child's school), which in this context can be thought of as the instrumental net benefit of each plan. This example illustrates the reasonableness of the two principles formulated above. If one supports school desegregation, considering only costs is shortsighted since even the most desirable of the above plans produced some costs and one would be forced to do nothing. By the same token, considering only racial balance benefits would be almost as shortsighted since one would have to choose the intuitively least desirable plan, that in which there was only one white student in each school.

The analysis offered here will thus compare the estimated net benefit of the current desegregation plan and our proposed alternative. This will include an analysis of the extent of white flight produced by the current plan and an estimate of the amount of interracial exposure it is likely to produce over time. An alternative desegregation plan will be created which is estimated to produce substantial desegregation without the attendant costs of mandatory student reassignments.

THE CURRENT DESEGREGATION PLAN

Racial Balancing

The current desegregation plan implemented in 1981 with the desegregation of the elementary schools and completed in 1982 with the inclusion of the secondary schools produced a substantial decrease in racial imbalance. As Table 1 indicates, the level of racial imbalance (D) in the elementary schools declined from 72 to 38.

An index of 72 means that 72 percent of the black students would have to be reassigned, if no whites were reassigned, in order to have the same percentage of blacks in each school as in the whole school district. An index of 100 represents complete racial imbalance since it means that 100 percent of the blacks would have to be reassigned if no whites were reassigned, in order to have the same percentage of blacks in each school as in the whole school district. The formula is

$$D = 1/2 \sum \left| \frac{Wi}{W} - \frac{Bi}{B} \right|$$

where Wi is the number of whites in each school, W is the number of whites in the whole school district, Bi is the number of blacks in each school and B is the number of blacks in the whole school district.

The level of racial imbalance, which had increased slightly in the middle schools between 1980 and 1981, declined by 38 percentage points from 58 to 20 in 1982. This decline is even greater than occurred in the elementary schools the year before. The high schools, which experienced a small reduction in racial imbalance in 1981, had a further decline of 29 percentage points from 59 in 1981 to 30 in 1982.

In addition, the extent of interracial exposure (Sbw) increased substantially from 24 to 36 percent white in the average black child's elementary school in 1981. At the middle school level, interracial exposure increased from 32 to 48 percent white in the average black child's school, and at the high school level, it increased from 32 to 47 percent white in the average black child's school. The formula for this index is

$$Sbw = \frac{\sum k \; NkbPkw}{\sum k \; Nkb}$$

where Nkb is the number of black students in each school and Pkw is the proportion (or percentage) white in the same school. This is summed for all schools and divided by the number of black students in all the schools. This index cannot be any higher

than the percentage white in the school system (or grade level) analyzed. It is a measure of net benefit because the percentage white in a black school will theoretically increase with racial balancing, but decrease with white flight. The ultimate outcome of these contradictory impacts of school desegregation is thus the net benefit in instrumental terms.

Every grade level shows a net benefit as a result of racial balancing despite whatever white flight has occurred. Unfortunately, the extent of interracial exposure in the elementary schools (the only grade level for which there is post-implementation data) declined by 2 percentage points in the year after implementation. Such a decline can be the result of segregatory administrative changes in the plan, or of a reduction in white enrollment.

Whether the result of administrative action or individual action (i.e. white flight), Tables 2 and 3 indicate that the plan has not been entirely successful in eliminating the racial identifiability of the East Baton Rouge schools even when those schools designated racially isolated by the court are excluded from analysis. Table 2 indicates that the pre-desegregation percentage black in each school is significantly correlated (1.00 is a perfect positive correlation) with the post-desegregation percentage black. Table 3 demonstrates that the racial characteristics of the school staff continue to be significantly correlated with the racial characteristics of the pre-desegregation student body. In other words, schools that had higher black student percentages prior to desegregation tend to have higher black teacher percentages and are more likely to have a black principal after school desegregation.

It is also possible to have resegregation within schools. The data in Table 4, calculated with the same index (D) used to determine school system racial imbalance, indicate a fair amount of classroom racial imbalance. Since in this case, the index takes as its standard the racial proportions in the school rather than the school system, high percentage black schools are not penalized by this index. (There are, however, two schools, Crestworth and Polk, in which there are so few whites that an index cannot even be calculated.) The mean level of racial imbalance for the elementary schools in 1982 is 24, for the middle schools 30, and for the high schools 33.

One factor related to classroom racial imbalance at the elementary school level is the gifted and talented program. The correlation between the number of such classrooms and the extent of racial imbalance is a statistically significant .26. At the secondary school level where there is tracking by subject matter, there is no relationship between G and T classrooms and school racial imbalance. Even at the elementary school level, however,

the relationship between the number of G and T classrooms and racial imbalance is not strong enough to rule out other factors and does not in and of itself demonstrate a violation. It does, however, suggest a need for further investigation.

White Flight

In order to determine the amount of white flight due to desegregation, it is necessary to estimate what the "normal" white enrollment change would be if the school district had not desegregated. (There was no decline in black enrollment at the district level so it is not analyzed here.) Since a school district cannot do two things at once, social scientists have created statistical techniques for estimating what would normally occur in the absence of a policy intervention. One simple technique is a linear trend analysis (of the form Y = a + bX) of pre-desegregation enrollment. A normal white enrollment loss rate was established beginning in 1975 and ending in 1979 for elementary schools and 1980 for secondary schools. The year before desegregation for each grade level was excluded from the normal trend analysis in order to avoid contamination due to what appears to be "anticipatory" white flight in 1980 from elementary schools and in 1981 from secondary schools.

This analysis is shown in Table 5 for grades 1-5, 6-8, and 9-12 separately and for grades 1-12 (excluding special education) and K-12 as a whole. The actual loss rate for each year is shown on the left for each grade level and the loss predicted from the 1975-1979 trend on the right. The predicted loss rate is then used to estimate white enrollment beginning with 1979 as the base. For example, a predicted loss rate of -5.8 percent from an actual enrollment in 1979 of 14,965 yields a predicted white enrollment of 14,097 in 1980. This is continued out to 1982, the last year for which there is actual data. The analysis shows that the actual loss rate in 1981 is about one-third greater than normal and the actual loss rate in 1982 is almost twice as high as normal. It is quite unusual to have a higher loss rate in the year after desegregation than in the year of implementation. Although phased-in plans tend to have greater white flight than those implemented in one year, the additional loss is usually not from the grade level or geographic area already desegregated. Typically it is from the yet-to-be desegregated grade levels or geographic areas. The total elementary school white enrollment loss due to desegregation by 1982 is almost 2,000 students (predicted enrollment of 11,565 minus actual enrollment of 9,591).

The analysis of the middle school enrollment shows a larger implementation year loss, but a similar total loss of a little over 2,000 due to desegregation. This technique applied to middle school enrollment probably overestimates the loss due to desegregation as a result of a strange reduction in the white enrollment decline in 1980. In the absence of any information on the validity

of middle school enrollment records in 1980, it seems imprudent to adjust enrollment trends for such a critical year.

The estimated loss due to desegregation in high schools is the smallest of all the grade levels. This conforms to the research findings on implementation year white flight.

A summary of these analyses is shown in Table 6. The total loss from 1979 to 1982 for elementary schools and 1980 to 1982 for secondary schools is 9,640 white students. The total loss due to desegregation from each separate grade level analysis is 4,599, or 48 percent of the total loss during that time period. This also conforms to the findings of other research studies which indicate that an extensive desegregation plan involving mandatory white reassignments will approximately double the normal white enrollment decline over a period of a few years. Typically, except where there are available white suburbs, the decline will return to normal or in some cases, less than normal, by the fourth year after desegregation. So far, Baton Rouge with a second year elementary school white enrollment loss larger than its implementation year loss is not following the usual pattern.

The loss due to desegregation can be broken down into the components shown in Table 6. The loss is estimated to be approximately 27 percent anticipatory white flight, about 60 percent implementation year white flight, and about 16 percent post-implementation white flight with only one grade level having a post-implementation year.

The school by school white loss rates (the percentage of white students assigned to a school who do not enroll at that school) and the estimated school reasignments by race (the percentage of assigned students who were not enrolled the previous year) are shown in Table 7. These loss rates vary considerably from school to school.

The data in Table 8 demonstrate that a major factor in explaining white enrollment loss is the pre-desegregation percentage black of the school. In the implementation year (1981 for elementary schools and 1982 for secondary schools), the overall loss rate for students assigned to schools at or above 90 percent black is 58 percent. Broken down by grade level, 61 percent of the white elementary school students, 45 percent of the white middle school students, and 67 percent of the white high school students did not enroll at the formerly 90 percent or above black schools they were assigned to. Moreover, research on the Boston schools conducted by Rossell and Ross (1979) demonstrates that such loss rates are likely to result, even after the implementation year, any time white students are reassigned to formerly black schools (varying according to the percentage black).

The implementation year loss rate for schools between 35 and 90 percent black is 13 percent overall. By grade level, it is 7 percent in elementary, 24 percent in middle, and 14 percent in high schools. The implementation year loss rate for schools less than 35 percent black is 8 percent overall. By grade level, it is 10 percent for elementary, 11 percent for middle, and a gain of 3 percent in high schools (caused primarily by the increase in white enrollment at Tara).

The post-implementation year loss rate patterns are almost the opposite of those in the implementation year. Schools formerly at or above 90 percent black actually show a percentage gain in white enrollment, although the numbers are so small in most cases that this cannot be construed as a positive indicator. The formerly white schools, those below 35 percent black, have the greatest loss rate. Thus, white students who were not assigned to a black school are continuing to leave the school system.

Table 9 displays the partial correlations between various school characteristics and the loss rate at formerly black schools (defined here as those not designated as racially isolated and into which white students were reassigned) and formerly white schools (those not designated as racially isolated and into which black students were reassigned). This analysis is conducted for the year of implementation controlling for the pre-desegregation percentage black and the post-implementation year (elementary schools only) controlling for the 1981 percentage black. Since the variable being analyzed here is proportional white enrollment change, a positive sign (the absence of a negative sign) indicates the variable has a positive effect on white enrollment and a negative sign that it has a negative effect on white enrollment (e.g. causes white flight). Coefficients close to zero mean there is no relationship.

These results suggest that poorer schools tend to have less white flight in the post-implementation year probably because poorer students cannot afford alternatives to the public school system; that schools with higher achievement scores have greater post-implementation year white flight, undoubtedly because it is related to income; that busing distance at this level of analysis has no relationship to white flight; that a pre-desegregation black principal results in greater white flight from formerly black schools in the implementation year; that the greater the pre-desegregation percentage of teachers who are black in formerly black schools, the less white flight in those schools post-implementation; and that magnet school programs in formerly black schools are associated with less post-implementation white flight those schools. Moreover, the number of gifted and talented classes, which is related to classroom segregation in elementary schools, has no significant relationship to white flight. Hence, if the intent of this program is to induce middle class, white

parents to keep their children in the public schools, there is no evidence it is working.

A multiple regression analysis of the implementation year white flight in formerly black and formerly white schools is shown in Table 10. This analysis explains very little of the variation in proportional white enrollment change. The first column in Table 10 displays the mean (X) for each variable listed. These data indicate significant differences between formerly black schools and formerly white schools with the former having more students on free lunch, being substantially more likely to have had a black principal, but having slightly smaller schools than the latter. The second column shows the unstandardized regression coefficient (b) which indicates the change produced in proportional white enrollment change by a one unit change in the independent variables listed. The third column shows the standardized regression coefficient (Beta). This indicates the relative strength of the relationship between that variable and proportional white enrollment change holding all other variables constant.

The single greatest factor in explaining white enrollment change is still the pre-desegregation percentage black, as well as the proportion in the free lunch program (i.e. poor). The greater the proportion black, the greater the white flight. The greater the proportion poor, the less white flight. In other words, it is the parents who can afford alternatives who are leaving the school system. As other studies of school desegregation have found, rejecters tend to be precisely the type of people whose continued attachment to public education is essential for sustaining the school's external support and internal achievement: those of upper middle to upper class status who are committed to educational quality for their children.

School size (measured by school capacity) is negatively, although weakly, related to white enrollment change. The larger the school, the greater the white flight. This has been found in other studies as well, and may be due to the fact that a minority population will seem smaller and less threatening in a smaller school than in a larger one, and discipline is easier to maintain in smaller environments. In formerly black schools, a pre-desegregation black principal is also significantly related to white flight. This is apparently another visible symbol of racial identifiability.

Table 11 displays the results of the multiple regresion analysis of post-implementation year proportional white enrollment change. This analysis is much more successful. It explains 86 percent of the variation in proportional white enrollment change in formerly black schools and 98 percent of the variation in proportional white enrollment change in formerly white schools.

The percentage black is positively, but a black principal in 1981 is negatively, related to white enrollment change in formerly black schools. Poorer formerly black schools have greater white flight, as do larger schools. Elementary school magnets are a significant attraction for whites. Busing distance is negatively, although not significantly, related to white enrollment change. The greater the busing distance, all other things being equal, the greater the white flight.

In formerly white schools, the predesegregation proportion black as well as the 1981 proportion black are positively related to white enrollment change. Put another way, the high status, higher proportion white schools are experiencing the greatest continual loss with desegregation. In these schools, having a magnet program is also a significant attraction for whites. Although there are only two cases, Northdale and South Boulevard, the most successful magnets appear to be the extended day programs.

The Long-Term Net Benefit of the Current Plan

The long-term white flight and the net benefit of the current school desegregation plan can be estimated by various techniques. One technique which is not useful is the linear trend analysis used earlier because the extraordinary white loss associated with the implementation of school desegregation is always followed by a declining loss rate. Thus, the pre-and post-desegregation trend in its entirety is not linear. A simple technique for estimating the post-implementation loss rate is to select a sample of school districts with similar characteristics, particularly plan characteristics, calculate a least squares equation to describe the enrollment trend for these districts, and use the derived slope to estimate the loss rate for East Baton Rouge. Four southern countywide school districts, Charlotte-Mecklenburg, Nashville, Montgomery, and Shreveport (Caddo Parish), were selected from the sample of 113 school districts in Rossell (1978). These districts had an average reduction in racial imbalance (D) of 41 percentage points compared to East Baton Rouge's 34 point reduction, a resulting level of racial imbalance of 39 compared to East Baton Rouge's racial imbalance of 32, and a pre-desegregation percentage black of 34 percent compared to 42 percent in East Baton Rouge. The average implementation year white enrollment loss rate was 9.4 compared to East Baton Rouge's loss in 1981 of 11.4 percent. 1/

1/ The white loss rates for Charlotte beginning in the year of implementation are -.046, -.033, -.024, -.032, -.021; for Nashville they are -.105, -.042, -.034, -.029, -.020; for Montgomery they are -.076, -.010, -.024, -.031, -046; and for Shreveport, -.147, -.023, -.024, -.075, -.002. The mean loss rates for the four school districts are -.094, -.027, -.027, -.042, -.022.

A linear least squares analysis of their post-implementation loss rate beginning with the year of implementation produces the following equation: $Y = -.081a + .0129X$ where Y is the predicted loss rate at any point in time, a is the intercept, i.e. the starting point for the particular cases analyzed, and X is the unit of time, in this case a year. Applying the slope of .0129 to white enrollment in East Baton Rouge every year from 1983 to 1987 as shown in the last column of Table 12 yields an estimated 1987 white enrollment of 19,613 shown in column three. A simple linear trend analysis of predesegregation enrollment in East Baton Rouge can be used to project black enrollment since it has not been affected by desegregation. This yields a 1987 black enrollment of 26,491. Under the current plan the school system at that time will be 42.5 percent white, a decline of almost ten percentage points from the 1982 percentage white. The level of interracial exposure in a racially balanced school system will decline by roughly one half a percentage point for every one point decline in the percentage white. This yields a net benefit of 37 percent white in the average black child's school, a figure which is still much higher than the pre-desegregation index of 28 in 1980. Thus, comparing the current plan to the status quo as it existed in 1980 indicates that, despite substantial white flight, the current plan produces a greater net benefit.

An Alternative Desegregation Plan

The alternative to the current desegregation plan is an Incentives Desegregation Plan which relies predominantly on majority to minority transfers and magnet schools. It assumes that the schools closed under the current plan will remain closed and that two additional schools, Broadmoor Middle and Scotlandville Middle Schools, will be closed.

Implementation of this alternative plan will require a three-year phasing period, during which time components of the Incentives Plan will be put in place and there will follow an orderly phase out of the Court-ordered plan.

During this interim phasing period, court assignments for the students in the thirteen elementary schools closed in 1981 will remain in effect.2/ Broadmoor Middle and Scotlandville

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2/ Pursuant to the May, 1981 court order Port Hudson students are assigned to Zachary; Alsen students to Bakerfield; North Scotlandville to Harding, Ryan, and Crestworth; Zion City to Sharon Hills and Merrydale; Hollywood to Banks, Delmont, and Claiborne; Capitol to Greenville; South Greenville to Broadmoor and Bernard Terrace; Sherwood Forest to Audubon; Wyandotte to Delmont and Dalton; Perkins to Dufrocq; Fairfield
(continued next page)

Middle Schools are to be closed in Fall 1985 when the current mandatory middle school desegregation plan is scheduled to be dismantled. Students currently enrolled in Broadmoor Middle and Scotlandville Middle Schools will be assigned to the middle schools indicated in Appendix B as a function of the elementary school attendance zone in which they reside.

The pre-desegregation 1980 M to M program attracted 387 black students at the middle school level and 235 black students at the high school level. This represents only one percent of the student population. Many school systems actively trying to desegregate have around five percent of their student population enrolled in such programs, if they also have magnet schools. An assumption made here is that the M to M programs could, as a result of school closings and more systematic recruiting, recruit 1,700 elementary school students, 200 middle school students, and 200 high school students, representing almost seven percent of the student population. While this is a greater than usual number of elementary school students in an M to M program, it is an attainable goal if the East Baton Rouge Parish School Board actively recruits these students as the Incentives Plan is put in place and the Court's plan is dismantled. This should take the form of an organized direct mail and telephone campaign advising parents of the schools their child is eligible to attend, the program offerings, and transportation.

This plan also relies heavily on magnet schools. The research on the effectiveness of magnet schools as a voluntary desegregation tool suggests several policy options which should be considered. First, magnet schools located in black neighborhoods have difficulty attracting whites and those located in white neighborhoods have difficulty attracting blacks. The magnet school literature, as well as the white flight analysis conducted in this study, suggest that this problem can be slightly alleviated by appointing black principals to magnet schools in white neighborhoods and white principals to magnet schools in black neighborhoods, and by ensuring that the racial composition of the school's faculty reflects the racial composition of the school system teaching staff. This reduces the racial identifiability of the school and stimulates the enrollment of the

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(continued from previous page) to Park; Southdowns to Walnut Hills; Reddy to Polk and Buchanan. While the court order is in effect, students assigned to these schools will remain in the desegregated school they are assigned to as part of the pairing and clustering of the above schools. Student assignment to Crestworth is temporary until that school becomes a magnet, at which time students are assigned to Ryan, Beechwood, and Progress, in accordance with the elementary school attendance zones described in Appendix A.

"non-resident" race. Second, because parents prefer all their children to attend the same school for reasons of convenience and security, the attractiveness of a magnet school can be increased by stipulating that if one child in a family enrolls in a magnet school, all the children in that family enjoy an enrollment priority as explained below. Third, newer or completely renovated magnet schools are more attractive to parents. Fourth, although program uniqueness is apparently not necessary to attract students (the designation "magnet" seems to have a greater attraction than any particular program), this quality helps to reduce resentment among non-magnet principals and school staff so that they are willing to inform students of magnet opportunities. Finally, because whites who volunteer for magnet schools in black neighborhoods tend to be more "liberal" and of higher social class than those who do not, elementary magnet school programs in these schools should be of the type that appeals to this group -- that is, less structured and more innovative (Montessori, team learning, etc.). At the high school level, examination schools have consistently proven attractive to such parents, although they produce some between-school segregation by class. By the same token, magnet schools in white neighborhoods should be of the kind that appeal to working class black parents (fundamental, back to basics, etc.).

With the dismantling of the Court's plan, minor adjustments will be made in the attendance zones of several schools to promote desegregation between contiguous areas. The current Court-ordered reassignments for Northeast Elementary and Northeast High will remain in effect indefinitely. Since both schools are in an isolated corner of the parish, transferring to and from other schools in the district is rather difficult from the perspective of the student and of the school administration. Moreover, both schools had less than normal white enrollment change this year -- 7 percent at Northeast High and 2 percent at Northeast Elementary. Hence, desegregation will be accomplished at these schools by the grade reorganization and attendance zone assignments currently in effect.

The magnet school programs outlined below assume that educational programs that raise low achieving children's achievement and promote positive race relations will produce stable desegregation plans that not only retain their current enrollment, but attract those that have already left the school system. The greatest failure of school administrators faced with desegregating a school system is their inattention to promoting positive race relations by implementing educational programs that deal with the academic problems of low achieving children (Rossell, 1981). Most school administrators are not aware of this social psychological research (see Rossell, Schofield, Crain, et al., 1981 for a review), having been trained in how to design curriculum not classroom social structure. More-

over, they often have the mistaken assumption that desegregated school systems can retain high achieving students solely by developing curriculum for them. Yet virtually all of the research indicates that the achievement of their child's classmates is of equal, if not greater, importance to parents in influencing their selection of schools. Hence, if school administrators wish to attract high achieving students, they must solve the educational problems of low achieving students, and the social problems produced by group disparities in achievement.

Special programs currently in effect should be evaluated accordingly. The special-focus fundamental programs should probably continue in schools in white neighborhoods as an attracting device for black students participating in the M to M program. The effect of the continuous progress programs, however, should be carefully evaluated by a special monitor trained in social science research methods. Virtually all of the research on "go-at-your-own-pace" programs indicates that they tend to depress low achieving children's learning, contrary to popular belief. The reason this occurs is that the low expectations low achieving students have for themselves and the low expectations their teachers have for them, combine to produce instruction that allows them to go slower and slower. At the end of any particular time period, low achieving students in such programs tend to be further behind than students of similar ability initially who were not in these programs.

What has been shown to be extremely effective is not "go-at-your-own-pace" learning, but "team learning" which is structured so that children learn and compete as part of a heterogenous classroom team. The child's score on any particular exam is a function of how well he or she has done in comparison to previous performance; there thus is none of the invidious comparison that goes on in the usual individualized classroom. Nevertheless, children are stimulated to achieve at continuously faster rates by the encouragement of their teammates who benefit from each other's achievement because individual scores contribute to the team score. This produces significant achievement gains for low achieving students whether in segregated (see Slavin and Karweit, 1982) or desegregated schools (Slavin, 1978a, 1978b, 1980), as well as promoting interracial friendships (Slavin, 1979). No other educational reform has produced gains as great in either domain, perhaps because no other reform is as well grounded in established psychological principles. (This program is disseminated by the U.S. Department of Education and has been implemented in almost 400 school districts and 1,800 schools in the U.S. See Appendix E for a sample teacher's manual and a newsletter describing its implementation in other school districts.)

The program descriptions which follow utilize this research, as well as programs, or parts of programs, described in the school

board's December 6, 1980 report, A Preliminary Proposal for the Further Desegregation of the East Baton Rouge Parish Schools, and modifications suggested by the East Baton Rouge Parish School Board staff.

Schools which remain predominantly one-race under the Incentives Plan should, to the extent necessary, continue to have their educational programs upgraded commensurate with what is being done in the desegregated schools. Moreover, the educational principles outlined above should also be seriously considered for the remaining one-race schools. For example, continuous progress programs are probably a mistake for the reasons suggested above. Team learning, however, has been shown to work as well in one-race schools as in desegregated schools in raising the achievement of low achieving children. This is because there appears to be a marked similarity in the way in which the social forces operate to promote achievement in these two different situations. Thus, it is recommended that there be a diffusion of this innovation throughout the Parish school system.

Magnet School Descriptions

Parameters: Any student currently attending a school outside of his/her pre-desegregation attendance area is reassigned to that attendance area, or a contiguous attendarce area as indicated in Appendices A, B or C to this plan, when the present student assignment plan is modified for their grade level. Since the research is unanimous in finding that the positive effects of desegregation on children are greater the earlier it is begun, kindergarten children will be included in the desegregation activity. Indeed, in one school, desegregation activity is proposed to begin at age 3.

The following eight elementary schools are proposed as magnet schools: four schools in white neighborhoods, Cedarcrest-Southmoor, (E23 on map), La Belle Aire (E52), La Salle (E54), Tanglewood (E103); and four schools in black neighborhoods, South Boulevard (E100), Northdale (E64), Crestworth (E29), and Park (E67). (See Appendix D for map and key.)

Three middle schools are proposed as magnet schools. They are the two currently in existence, Istrouma (M49) and McKinley (M59) located in black neighborhoods, plus one additional one at Sherwood (M98) located in a white neighborhood. Four high school magnets are proposed. They are the two currently in existence, Baton Rouge (H8) in an integrated central neighborhood, and Scotlandville (H93) in a northern black neighborhood, and two additional ones, Capital (H20) in a black neighborhood, and Broadmoor (H15) in a white neighborhood.

In order to increase the attractiveness of these schools to the non-resident race, magnet schools at all grade levels should, as vacancies become available, be assigned white principals if they are in black neighborhoods and black principals if they are in white neighborhoods. In addition, the racial composition of the teachers in a magnet school system should reflect the racial composition of the school district teaching staff.

Attendance zones for all magnet schools will be the entire Parish school system, although those currently enrolled in a school designated for a magnet program will have first priority to remain there, subject to the prescribed limits of the projected racial occupancy as described below in the section on implementation. Research indicates that almost all white students prefer to stay in the school they are currently attending when it is converted into a magnet regardless of the academic specialty. The experience of Los Angeles also suggests that most whites who enroll in magnet schools under the stimulus of a mandatory desegregation backup will remain there when the mandatory plan is dismantled. Implementation of the Incentives Plan requires some overlap in the phasing-in of the magnet schools and the phasing-out of the Court-ordered plan. As a consequence, it is contemplated that greater participation in the magnet program will occur than would be the case if the transition were abruptly accomplished.

None of the magnets are add-on programs. Such programs have two serious disadvantages. First, because the school remains basically racially identifiable, it is even more difficult to recruit the non-resident race to a school than usual. Secondly, because there is a segregated enclave, intergroup hostility is always a problem.

Because the purpose of magnet schools is not only to provide quality education but to desegregate the school system, a priority selection system should be established based on the degree to which transfers desegregate or resegregate the sending schools. First priority should be given to those currently enrolled when the magnets are created. Second priority should be given to those students in the most segregated schools in the system. Last priority should be given to students in schools desegregated by residential patterns and this should be carefully controlled to prevent resegregation.

LA SALLE FUNDAMENTAL MAGNET

Location: La Salle Elementary School

Grade Level: K-5

Staff: Teaching staff reflecting the racial composition of the East Baton Rouge Parish school system teaching staff; preferably a black principal.

Participants: Citywide attendance zone with first priority given to those currently enrolled, as described in more detail in the section on implementation below, up to a projected racial occupancy of 45 percent black and 55 percent white.

Program Description: The fundamental school offers an alternative program which emphasizes discipine in teaching, learning, and behavior. It stresses a strong basic instructional program in reading, writing, spelling, and mathematics. Instruction in history and government, as well as respect for self and others, courtesy, and patriotism are emphasized. Clearly defined standards of conduct and dress are established to which parents are requested to agree.

There will be no ability grouping based on levels of achievement since research indicates that, despite its popularity with teachers and administrators, it is of no benefit to students. Rather classrooms will be organized into heterogeneous competitive teams of five or six students, as described above. (See Appendix D.) Student scores in "teams-games-tournaments" are based on improvement over their previous performance; thus every student has the potential to be a winner. Moreover, because each student's score contributes to his or her team's score, students have an incentive to encourage the improvement of their teammates. The classroom is thus based on the same principles of cooperation and competition as athletic performance.

Students will receive letter grades that reflect their performance in "games and tournaments," and other work. All students will have assigned homework and a parent contract agreeing that it will be supervised and completed.

Costs: In-service training of 27 teachers for 2 days at an average cost of $40/day: $2,160.

CRESTWORTH COMPUTER/MATH/SCIENCE MAGNET

Location: Crestworth Elementary School

Grade Level: K-5

Staff: Teaching staff reflecting the racial composition of the school system teaching staff; preferably a white principal.

Participants: Citywide attendance zone. Open admission of those students interested in computers/math/science with first choice given to those currently enrolled, as described in the implementation section below, up to a projected racial occupancy of 45 percent black and 55 percent white.

Program Description: The program will provide in-depth computer, math and science studies with laboratory centered instruction. Computers can establish a new way of learning for elementary school students, as well as being an object of study. The primary means of such learning is a computer program called LOGO (see Papert, 1980). Unlike most computer based instruction in which the computer "drills" the child, LOGO enables the child as early as three years old to teach him or herself math and reading skills. Developed at MIT's Artificial Intelligence Laboratory by Seymour Papert, a student of Piaget's, the computer language and its instructional program have been implemented in numerous school systems around the country. According to Papert it has its most spectacular successes among low and average achieving students. It is thus another means of "integrating" high and low achieving, black and white, upper and lower socioeconomic students by raising the achievement of all, but particularly of those usually hurt by the school system.

The curriculum may also include additional computer languages such as BASIC and PASCAL in the later grades, and science programs such as Elementary Science Center, Biological Science Curriculum, and Science Curriculum Improvement Study. Instruction will be supplemented with science and mathematics fieldtrips, consultants, and special projects.

An extended day program will be offered in conjunction with the above for the children of working parents of full-time students. It is expected that only a small portion of the students in this magnet will be eligible for the extended day schedule.

Cost: 50 Commodore 64 computers at $900 each, $45,000 (assuming a 20 percent educational discount; retail is $595 for the computer, $399 for the disk drive, and $150 for the monitor). 20 copies of the LOGO program at $140 each with discount; $2,800; (Apple 2 plus's already owned by the school system can be adapted to use LOGO with a language card costing around $156 for each computer.); $5,000 for miscellaneous software. Providing substitute teachers while

training 15 teachers in LOGO for five days, $3,000; providing extended day instruction for an estimated 50 students at $11/hour = $660/week additional operating expense. Total = $55,800 in start-up costs and $660 a week in additional operating expenses.

LA BELLE AIRE INTERCULTURAL LANGUAGE MAGNET

Location: La Belle Aire Elementary School

Grade Level: K-5

Staff: Teaching staff reflecting the racial composition of the school system teaching staff; preferably a black principal. Participants: Citywide attendance zone. Open admission with those currently attending La Belle Aire, as described in the implementation section below, up to a projected racial occupancy of 45% black and 55% white.

Program Description: The program will develop language proficiency in Spanish and French, as well as English, for the student who completes five years of instruction. World cultures and international relations will also be studied, in addition to more basic skills. Instruction will be all or partly in the foreign language selected depending on the grade level of the student.

The program is quite well suited to the team learning instructional approach. In this case between-student communication will not only facilitate interracial friendships, but language acquisition.

Costs: Some of the language faculty can be shifted from secondary schools with excess capacity, but most will have to be hired. An estimated 15 teachers fluent in French or Spanish will cost an estimated additional $270,000. Training teachers in the team learning method will cost about $2,300 for substitutes for 29 teachers for 2 days training. Total = $272,300.

CEDARCREST-SOUTHMOOR MUSIC AND ART LEARNING CENTER

Location: Cedarcrest-Southmoor Elementary School

Grade Level: K-5

Staff: Teaching staff reflecting the racial composition of the school system teaching staff; preferably a black principal.

Participants: Citywide attendance zone. Open admission to those

interested in music and/or the arts with first choice going to those currently enrolled, as described in the implementation section below, up to a projected racial occupancy of 45% black and 55% white.

Program Description: The music and arts learning center is an alternative elementary school offering a strong academic program in language, arts, science, and math, with special emphasis on the visual arts, theater arts, and vocal and instrumental music. The program will draw from the artistic resources of the community including cultural and educational organizations, artists, scholars, historical societies, and the mass media. Students' abilities and interests in the arts will be developed through individual and small group instruction. Students will regularly attend appropriate concerts, theaters, and shows, and the school will have an extended day schedule to allow for concentration in an area of interest.

Cost: Extended day schedule for 10 teachers, $2,750/week additional operating expense.

NORTHDALE EXTENDED DAY CENTER

Location: Northdale Elementary School (continuation of current program)

Grade Level: K-5

Staff: Faculty reflecting the racial composition of the school system teaching staff; preferably a white principal.

Participants: Citywide attendance zone; admission only to children of working parents and full-time students.

Program Description: Curriculum described in The Extended Day Centers Handbook, 1982-83; additional implementation of team learning method.

Cost: The only additional cost is of providing substitute teachers while training 12 teachers in team learning for 2 days, $960.

SOUTH BOULEVARD EXTENDED DAY CENTER

Location: South Boulevard Elementary School (continuation of current program)

Grade Level: K-5

Staff: Teaching staff reflecting the racial composition of the school system teaching staff; preferably a white principal.

Participants: Citywide attendance zone; admission only to children of working parents and full-time students.

Program Description: Curriculum described in The Extended Day Center Handbook, 1982-83; additional implementation of team learning method.

Cost: Additional cost of providing substitute teachers while training 15 teachers in team learning, 2 days = $1,200.

PARK MATH/SCIENCE/COMPUTER/MONTESSORI PRE-SCHOOL/CENTER

Location: Park Elementary School

Grade Level: Montessori pre-school (ages 3 to 5 only); rest of magnet curriculum 1st through 5th grade.

Staff: Faculty reflecting the racial composition of the school system teaching staff; preferably a white principal.

Participants: Citywide attendance zone. Open admission of students interested in math/science/computers and Montessori program with first preference to enrolled students, as described in implementation section below, up to a projected racial occupancy of 45% black and 55% white.

Program Description: See Crestworth program description for math/science/computer education and team learning description; additional implementation of Montessori program as described on p. 74 of the school board's December 6, 1980 A Preliminary Proposal for the Further Desegregation of the East Baton Rouge Parish Schools.

Cost: 70 Commodore 64 computers at $900 each with discount, $63,000; 20 copies of the LOGO program at $140 each with discount, $2,800; $5,000 for miscellaneous software; providing substitute teachers while training 15 teachers in LOGO for five days, $3,000; providing substitutes while training 42 teachers for 2 days in team learning, $3,360; providing substitutes while retraining ten kindergarten teachers to be Montessori preschool teachers for five days, $2,000. Total = $79,160.

TANGLEWOOD UNIVERSITY LABORATORY CENTER

Location: Tanglewood Elementary School

Grade Level: K-5

Staff: Faculty reflecting the racial composition of the school system teaching staff; preferably a black principal.

Participants: Citywide attendance zone. Open admission with first preference to enrolled students, as described in the implementation section below, up to a projected racial occupancy of 45% black and 55% white.

Program Description: See p. 34 of the school board's December 6, 1980, proposal. The program includes low teacher-pupil ratio, master teachers, university personnel and resources, student teachers, and local staff; additional implementation of team learning in some classrooms.

Cost: Providing substitutes while training 10 teachers in team learning for 2 days, $800; other needs can be met by shifting extra personnel to this school.

MCKINLEY MIDDLE MAGNET

Location: McKinley Middle School (continuation of current program)

Grade Level: 6-8

Staff: Faculty reflecting the racial composition of the school system teaching staff; preferably a white principal.

Participants: Citywide attendance zone; those interested in an academic program who meet the requirements, up to a projected racial occupancy of 45 percent black and 55 percent white.

Program Description: See school board publications; addition of a team learning component in math, English, science, and U.S. history.

Cost: Additional cost associated with providing substitutes while training 20 teachers in team learning for 2 days, $1,600.

ISTROUMA MIDDLE MAGNET

Location: Istrouma Middle School (continuation of current magnet program).

Grade Level: 6-8

Staff: Faculty reflecting the racial composition of the school system teaching staff; preferably a black principal.

Participants: Citywide attendance zone, students interested in an academic program who meet the requirements, up to a projected racial occupancy of 45 percent black and 55 percent white.

Program Description: See school board publications; additional team learning component in math, science, English, and U.S. history.
Cost: Providing substitutes for 20 teachers while training them in team learning for 2 days, $1,600.

SHERWOOD COMPUTER/MATH/SCIENCE MAGNET

Location: Sherwood Middle School

Grade Level: 6-8

Staff: Black principal; faculty reflecting the racial composition of the school system teaching staff.

Participants: Citywide attendance zone. Open admission of students interested in computers, math and sciences with first choice given to those currently enrolled as described in the imp ementation section below, up to a projected racial occupancy of 45% black and 55% white.

Program Description: The program will provide in-depth computer, math, and science studies with laboratory centered instruction. The curriculum will be an extension of that taught at Park and Crestworth including, but not limited to, LOGO, Basic and Pascal. Math and science instruction will be laboratory-centered and enriched through discussion tactics, field trips, and multi-level, multi-media materials. Resource persons will be made available, and mathematics and science fairs will be entered.

Cost: 90 Commodore 64 computers at $900 each, $81,000; 30 copies of LOGO at $140 each, $4,200; 30 copies of Pascal at $140 each, $4,200; additional miscellaneous software, $5,000; providing substitute teachers while training 20 teachers in team learning methods for 2 days, $1,600. Total: $96,000.

BATON ROUGE HIGH MAGNET

Location: Baton Rouge High School (continuation of current program)

Grade Level: 9-12

Staff: Faculty reflecting the racial composition of the school system teaching staff; preferably a black principal.

Participants: Citywide attendance zone; students interested in an academic program who meet the requirements up to a projected racial occupancy of 45% black and 55% white.

Program Description: See pp. 7-9 of the school board's December 6, 1980 proposal, and other school board publications for a description of the academic/performing arts program.

Cost: No additional cost anticipated.

CAPITOL HIGH TECHNICAL CAREER MAGNET

Location: Capitol High School

Grade Level: 9-12

Staff: Faculty reflecting the racial composition of the school system teaching staff; preferably a white principal.

Participants: Citywide attendance zone; students interested in a technical education who have the prerequisites, with first priority going to those currently enrolled up to a projected racial occupancy of 45% black and 55% white, as described in the implementation section below.

Program Description: See Report to the Federal District Court on the Feasibility of a Petrochemical Magnet, Oct. 29, 1982, prepared by Donald Helms, Associate Superintendent, East Baton Rouge Parish School System. The only suggested amendment is that the program be limited to technical vocations, that an engineering component be added, and that the construction trade industry not be included in the vocational training offered.

Cost: The above report estimates it will cost $150,000 to open each of three components, plant operations, instrumentation/electronics and mechanical technology, and $287,025 yearly to operate them. Pierre and Associates (On Establishing A High School for the Engineering Professions Within the East Baton Rouge Parish School System, October 1, 1982) estimate the engineering component would cost an additional $85,000. It is not clear what the net cost above current operating expenses at Capitol will be, nor is it certain how much industry will contribute.

BROADMOOR SENIOR MAGNET SCHOOL

Location: Broadmoor High School

Grade Level: 9-12

Staff: Faculty reflecting the racial composition of the school district teaching staff; preferably a black principal.

Participants: Citywide attendance zone. Open admission of those students interested in the program who meet the requirements with first priority going to those currently enrolled as described in the implementation section below, up to a projected racial occupancy of 45% black and 55% white.

Program Description: Off-Campus LSU Laboratory Center, Business/Office Center, and Medical/Health Center. See pp. 83-88 of A Preliminary Proposal for the Further Desegregation of the East Baton Rouge Parish Schools.

Cost: The Laboratory Center's needs can probably be met by shifting personnel and obtaining donated time and resources. Some equipment and training can be expected to come from the industries benefiting from the training of these students. It is estimated that equipment for the Business/Office Center would cost around $100,000 if none is donated. Equipment for the Medical Health Center should be less, probably around $25,000, because cooperative programs with local agencies, hospitals, research laboratories, and universities can provide much of the exposure to the necessary equipment. Total: $125,000 in start-up costs.

SCOTLANDVILLE ACADEMY

Location: Scotlandville High School

Grade Level: 9-12

Staff: Faculty reflecting the racial composition of the school system teaching staff; preferably a white principal.

Participants: Citywide attendance zone, admission only on the basis of a competitive examination given twice a year, up to a projected racial occupancy of 45 percent black and 55 percent white.

Program Description: This examination school should offer a "classical" education with four years of a foreign laguage, four years of mathematics, four years of science, and four years of English composition and literature required of all students.

Cost: No additional cost except admininstering and evaluating entrance examination, $5,000.

Total Enrollment and Cost of Magnets

All magnet schools are projected to be enrolled to eighty percent of capacity by Fall 1987. Based on that projection, the total enrollment for all 15 magnets is 11,383. This represents 1,555 black and 1,901 white elementary school students; 1,360 black and 1,664 white middle school students; and 2,206 black and 2,697 white high school students. This is not an unrealistic projection given the attractiveness of the magnet schools in East Baton Rouge during the last two years and the experience of other school districts in similar situations. It is assumed that the magnet schools will be able to sustain this enrollment when the present student assignment plan is modified.

The total startup costs for 14 magnets, of which 6 are continuations with little additional cost, is an estimated $637,380, plus Capitol Technical Career Magnet with a cost of $535,000 for a total of $1,172,380. This does not include renovations which may be necessary, probably costing an additional $500,000 at schools other than Capitol. The total operating expenses for 14 magnets is an estimated $109,120 plus another $287,025 for Capitol. The yearly operational cost of the publicity campaign detailed below might be an additional $100,000 if a publicity office is staffed as much as possible by school system personnel shifted from other areas and if some media publicity is donated. Some of these expenses may be defrayed by organizing university and business "pairings" with desegregated schools. These institutions would then donate time and resources to the school(s) with which they were linked.

Estimating the Net Benefit of Each Plan

The relative merit of the plan proposed here rests on two assumptions. The first is that if the current mandatory plan is dismantled, some of the whites who left the school system can be attracted back. This is not an unrealistic assumption since it consistently occurs in school systems that have dismantled their mandatory plans entirely (e.g., Los Angeles), and in those that only bus whites in some grades (e.g. Louisville, and many Florida school systems). It is assumed here that approximately half of the whites who left the school system can be attracted back since there is some evidence that most of that flight was to private or other schools, rather than residential relocation to school systems outside the Parish. A second assumption is that a plan which relies primarily on voluntary transfers will produce less white flight. The literature is unanimous in supporting such an assumption; the only debate being over how much interracial contact is produced.

Table 13 lists in columns 1 and 2 the estimated 1983 resident enrollment by race with the current plan and the new magnets, artificially assuming for the sake of simplicity that all

proposed magnet schools are implemented in that year and obtain their projected enrollments. Column 3 shows the resulting proportion white in each school with the current plan and the additional magnet school transfers. Column 4 indicates the capacity of each school. Columns 5 and 6 show the estimated 1987 pre-transfer enrollment for each school adjusted for the black and white enrollment change from 1982 to 1987 shown in Table 14. This estimate assumes that the white enrollment return occurs in 1986 and 1987. Columns 7 and 8 indicate the estimated transfers for Outcome 1, which has no M to M transfers at the elementary school level. Columns 9, 10, and 11 show the resulting enrollment and proportion white. This can be thought of as the conservative estimate of the impact of a voluntary plan. Outcome 1 produces a level of interracial contact (Sbw) of 32 percent white in the average black child's school in 1987.

While no individual school's composition can be guaranteed, the overall level of interracial contact projected here is readily achievable with an adequate effort on the part of the school board. With a real commitment on the school board's part, the level of interracial contact should rise substantially higher. While Outcome 1 exceeds substantially the pre-desegregation level of racial imbalance (D), it is not competitive with the Court's plan, at least over the short term. It it produces substantially less white flight, it may be quite competetive, however, over the long term.

Columns 12 through 16 show black and white magnet school transfers and M to M transfers for all grade levels for Outcome 2. This is a more optimistic estimate which assumes that about half of the black students from closed elementary schools can be recruited to the M to M program or magnet schools. As part of this analysis they are randomly "volunteered" for predominantly white schools. For the sake of simplifying the analysis, it is assumed artificially that magnet schools and the M to M program will achieve their goals in one year in all outcomes. As pointed out above, however, it is quite likely that it will take some schools two or three years to meet their projected goals.

White enrollment has been adjusted each year by white flight from desegregation and the normal school loss rate. Hence, all outcomes reflect additional white flight in 1983 from the reassignments associated with the implementation of the magnets--an estimated white loss rate of 11.5 percent. Although black reassignments into white schools produce far less white flight than white reassignments into black schools, they do produce some flight as the analysis in Table 8 demonstrates. Outcome 2 in 1987 produces a level of interracial exposure of 36, which is substantially higher than predesegregation and almost as high as the court's plan that year.

Table 14 shows the resulting enrollment in each year from 1983 to 1987 and the proportion white in the average black child's school with the court's plan and with Outcomes 1 and 2 of the U.S. plan. We can see that although in 1987 the proportion white in the school system is higher with both outcomes of the proposed voluntary plan, the proportion white in the average black child's school is lower than the court's plan with Outcome 1 and almost the same with Outcome 2. However, Outcome 1 leaves 40 schools and Outcome 2 leaves 22 schools at or above 80% one-race, compared to 17 under the court's plan.

Nevertheless, if we assume a lower white enrollment decline under the proposed plan, as the research would suggest, the proportion white in the average black child's school with Outcome 2 of the proposed plan will surpass the court's in only a few years. If the current trend continues, which is unknown, Outcome 1 may produce about the same level of interracial exposure as the court's plan in 1991 as a result of a smaller white enrollment decline.

A complete cost-effectiveness analysis must, of course, also include other costs and benefits of each plan. The costs of the court's plan might include both black and white hostility to reassignment, the inability of parents to get quickly and easily from home to school for parent-teacher conferences and other school functions, and a diminished support for public education as a result of the loss of the children whose parents are most critical to the success of the public schools -- upper middle class, "quality consumers." Although these costs are not quantifiable, they are very real nevertheless. This plan has certain costs attached to it also, but they are small by comparison -- the temporary disruption of education in 1983 and 1987, and the additional start-up and operating costs mentioned above. This plan is a viable alternative to the current court plan, for it achieves a relatively high instrumental net benefit, with much less flight from the system and much less of the unmeasurable costs suggested above.

IMPLEMENTATION

This Incentives Desegregation Plan is not designed to be, nor can it be, completely implemented with immediate success. Only with a carefully phased implementation, and with the complete support of the East Baton Rouge Parish School Board and community, can this plan accomplish its objectives. In this regard, the United States submits that the following operational procedures for magnet schools, together with the schedule for implementing this plan, are responsible and feasible, and can result in an orderly transition to a stably desegregated school system in East Baton Rouge Parish. Upon full implementation of the Incentives Plan, all students will attend the school in their residential zone unless a student chooses another enrollment option. Since the system is presently operating under the order of a federal court, the Incentives Plan and the phased implementation must be submitted to the Court for its approval.

I. Magnet School Operation

The magnet school programs to be established under this plan, if planned and implemented carefully and effectively, can result in stable school desegregation in East Baton Rouge Parish, as well as increase substantially the quality of the education provided to students in the system. Adhering to the following guidelines for magnet school operation will best enable the School Board to achieve these results.

A. Magnet School Zones

Upon establishing an appropriate magnet school program at any school, attendance at that school shall be on a Parish-wide basis (subject to the enrollment priorities outlined below) and that school will no longer have a neighborhood attendance zone. Students residing in the former attendance zone of what has become a magnet school will be reassigned to a new school zone contiguous to their former zone. These "expanded" school zones are set forth in Appendices A and D below, and illustrated in Map Set A, provided with this plan. Notwithstanding anything in this plan concerning assignment of students, it is understood that any student may participate in the majority to minority (M to M) transfer program already in effect in the system when that student has met the requirements for such tranfer. M to M transfers can be used by any student for any school other than a magnet school.

B. Student Admission Priorities for Magnet Schools

All magnet schools will be maintained as desegregated schools by admitting students in a ratio of 55% white and 45%

black, ±2.5 percentage points, and at Scotlandville ± 10 percentage points .3/ In admitting students, the following enrollment priorities shall be in effect, in the following order, for attendance at magnet schools established under this plan:

For the first year of operation of a magnet school, enrollment priority shall be given to those students who were enrolled in that school at the end of the previous school year, provided that such priority does not impede the achievement of the projected student ratios for that school. This enrollment priority shall be in effect for only the first year of the magnet's operation. After the enrollment priority is applied, admissions will be governed by the same priorities, listed below, which govern admissions beginning in the second year.

Beginning with the second year of operation of a magnet school, admission shall be determined by these enrollment priorities, followed by random selection:

1. Any student properly admitted to a magnet school established under this plan shall have priority for enrolling at that school each subsequent year until that student graduates from or completes the courses at that school, regardless of changes in racial enrollment proportions therein.

2. Any student not readmitted to Park, Crestworth, Broadmoor High or Capitol High in the first year that each school is operated as a magnet.

3. Students attending schools which are one-race4/ will have enrollment priority at the magnet school of their choice, subject to any academic admission requirements established by the Board for the magnet school.

4. Where one child in a family is properly admitted to a magnet school and still attends that school, all other children in that family will have enrollment priority for that magnet school so long as they qualify for admission under any academic admission standards established by the School Board.

5. Other spaces in magnet schools will be assigned from a random drawing of remaining applicants. Extreme care should be taken in assigning to magnets students from schools desegregated by residential patterns, and such assignment should be carefully controlled to prevent resegregation of the sending school. Also selected by the same random drawing will be the waiting lists for each school. The random selection for admission and waiting lists will continue until the entire applicant pool is

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3/ The School Board's present method of admitting students to magnet schools in groups proportioned to reflect the racial occupancy criterion is an adequate method of administering student admission.

4/ A one-race school, for purposes of this plan, is any school which has a student body which is equal to or exceeds 80% of one race.

either admitted or assigned to a waiting list. Immediately after the waiting list is created, and if a magnet school is under capacity, the Board shall inform the parents of each student assigned to a waiting list that their child can be admitted to the magnet school if sufficient other-r.ce students apply for the magnet school. The Board will accept late applications for any magnet school for which there is no academic admission standard, and students applying late will be ranked on a first-come, first-served basis. Waiting lists for magnet schools will be newly created each year, with no carry-over from one year to another.

C. Rising High School Seniors

When a high school is changed into a magnet school, or at the beginning of the 1987-1988 school year (when the present student assignment plan for high schools is phased out as explained below), those high school students entering their senior year of high school shall, at the discretion of the School Board, be allowed to pursue their regular course of instruction and complete their senior year at the high school they attended prior to the change affecting that school, notwithstanding any enrollment priorities, magnet programs, and/or high school attendance zones in effect for their senior year.

D. Publicity and Community Relations

An important element of School Board support of this plan is effective publicity for each magnet school and student transfer option. Each student, and the community at large, should understand and be well-informed of the commitment of the School Board and school staff to quality desegregated education and of the choices available to any student for pursuing, in a desegregated setting, every educational opportunity offered in East Baton Rouge.

To this end, the School Board must aggressively publicize all aspects of the magnet school and student transfer programs, and should pursue every available means, direct and indirect, of publicizing and recruiting students, calculated to result in student and community participation in the magnet schools over the short- and long-term.

Direct recruiting efforts that should be used are brochures; posters; mailings to parents; regular school visits by central administrators, magnet staff, or students; assemblies; slide shows or film strips; radio or television advertisments; newspaper supplements with tear-off application coupons; magnet school Information Fairs for parent-teacher associations and other civic organizations; and magnet school visitor tours. Indirect efforts calculated for long-term support and participation are performances at schools and community functions by music and art

magnet students, and coverage by local news sources of human interest stories about the schools.

Any written materials and brochures about magnet schools and options available to families in the public schools should be carefully prepared so as to promote, in both black and white communities, the advantages of desegregated schools and the magnet school programs. Separate written materials should be developed for each magnet school. Such materials should be distributed to present students, mailed directly to all students in the public schools, sent to Parent Teacher Associations, and distributed to churches, private schools, civic organizations, and local businesses. Posters or other mass advertising devices should be created and disseminated to places people frequent, such as shopping centers and grocery stores. Local realtors and realtor organizations should be supplied with materials so they are capable of educating potential homebuyers of the various magnet schools offered in different parts of the Parish. Prominantly displayed in all written materials should be one or more sources in the system where more detailed information can be obtained.

As magnet programs develop, local speaker bureaus can be established of parents who have been pleased with their involvement in magnet schools. Visits to particular magnet schools can be organized for groups of interested parents, with transportation supplied by the School Board.

Local television and radio stations should be asked to donate air time for publicity and features of the magnet schools. The school system should consider hiring someone to prepare human interest stories and serve as a liaison to the local press.

Magnet school teachers can also visit regular school classrooms and simulate the magnet classroom experience for students. Where specific target groups exist, such as the students formerly enrolled in schools closed to become magnets, recruiting should be highly specific. Direct mail and telephone contact with parents, with follow-ups where necessary, would be appropriate.

A strategy for indirect recruiting is to approach businesses for donations of conveniently located meeting space that the school system can use to invite parents to learn about the educational and desegregative advantages of magnet schools. The school system can even arrange for particular businesses to "adopt" a school, whether or not a magnet school, to allow the business and school to exchange the expertise, personnel and resources each possesses.

The publicity given to magnet schools and desegregation efforts generally should be aggressive, thorough, and imaginative.

If the Board fails to aggressively promote and inform the community and its students about the range of educational opportunities available in the Parish, it will not have adequately supported the implementation of this incentives plan.

E. Selecting Faculty and Principals for a Magnet School

The most critical elements in selecting faculty members for a magnet school are, of course, desire to teach in the magnet school and demonstrated commitment to desegregation. Faculty members teaching at a school which becomes a magnet school should, if they desire to continue to teach in the magnet school, be given an opportunity to do so. Lack of technical qualifications for the magnet program for that school will not prevent such a teacher from being selected at a magnet school providing (1) the technical qualifications can be obtained within a reasonable time so as not to affect the teacher's ability to teach the students, and (2) the teacher's position at the school is contingent on obtaining the technical qualifications within a reasonable, defined time period.

Principals qualified for magnet schools should be selected, where feasible, so that black principals will head magnet schools in white areas and white principals will head magnet schools in black areas. This factor will most critically influence the attractiveness of magnet schools after the Court's present plan is phased out and the stimulus of mandatory desegregation is no longer present. As with other aspects of the implementation, the School Board's performance on principal selection for magnet schools will indicate its support for this plan.

F. Curriculum and Facility Development

Details of curriculum and facility development for a magnet school should, where possible, be determined by a process involving the faculty that teaches in the magnet school. Each faculty member shall have an opportunity to register his or her views or recommendations on program or facility modifications after being selected as a teacher in a magnet school.

II. General Plan for Establishing Magnet Schools

Set out below is a plan for achieving the objective of this Incentives Plan. Magnet school implementation is to begin in Fall 1983 and continue through Fall 1985. Success of the magnet programs will lead to phasing out of the present student assignment plan at the middle schools in Fall 1985, elementary schools in Fall 1986, and high schools in Fall 1987.

A. 1983-1984 School Year

The present plan, as set forth in the Court's orders of May 1, 1981, March 8, 1982 and April 30, 1982, will remain in effect for all schools but for the exceptions outlined below. Unless otherwise stated, any students choosing assignment to a school not yet exempted from the court's mandatory plan will attend a school consistent with those portions of the Court's mandatory plan still in effect for the school chosen.

Beginning with the 1983-1984 school year, the School Board shall do the following:

1. Tanglewood Elementary School

(a) The School Board shall establish the Laboratory Elementary Magnet at Tanglewood Elementary School. The projected racial enrollment of this school shall be 55% white and 45% black, +2.5 percentage points, and students for this school shall be chosen by the Board from among applicants for this program in such a way as to achieve this projected enrollment. For the first year of operation of this magnet program, enrollment priority shall be given to those students currently enrolled in Tanglewood Elementary School, so long as such priority does not impede the achievement of the projected racial occupancy. Admission of all other students in the first year and of all new students in subsequent years to the magnet school will be determined by enrollment priorities and random selection.

(b) Those students currently attending Tanglewood Elementary School, and new students in the East Baton Rouge Parish School System, who reside in the current Tanglewood attendance zone and choose not to participate in or are not admitted to the Tanglewood Laboratory magnet program:

1. May choose within capacity limits to attend either Brownfields or Ryan Elementary Schools. The East Baton Rouge Parish School Board will honor only those choices which promote a desegregated enrollment5/ at Brownfields or Ryan, or

2. Shall attend Forest Heights, Sharon Hills, or Greenbrier Elementary Schools in accordance with the neighborhood

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5/ For purposes of this plan, assignment of a student to a particular school promotes a desegregated enrollment when such assignment results in a student enrollment of no more than 65 per cent of one race.

attendance zones[6/] of those schools as set forth in Appendix A to this plan.

(c) Those students currently attending Tanglewood Elementary School who reside in the Brownfields or Ryan attendance zones, and choose not to participate in or are not admitted to the Tanglewood Laboratory Magnet Program, shall attend either Brownfields or Ryan Elementary Schools. The East Baton Rouge Parish School Board will honor a choice by such students for and assign student to one of these schools only when it promotes a desegregated enrollment therein, within the capacity of each school.

2. LaSalle Elementary School

(a) The School Board shall establish a fundamental magnet school at LaSalle Elementary School. The projected racial enrollment of this school shall be 55% white and 45% black, ±2.5 percentage points, and students for this school shall be chosen by the Board from among applicants for this program in such a way as to achieve this projected enrollment. For the magnet's first year of operation, enrollment priority shall be given to those students currently enrolled in LaSalle Elementary School, so long as such priority does not impede the achievement of the projected racial occupancy. Admission of all other students in the first year and of all new students in subsequent years to the magnet school will be determined by enrollment priorities and random selection.

(b) Those students currently attending LaSalle Elementary School, and new students in the East Baton Rouge Parish School System, who reside in the current LaSalle attendance zone and choose not to participate in or are not admitted to the LaSalle fundamental magnet program:

1. May choose within capacity limits to attend either Goodwood, DuFrocq or Cedarcrest Elementary Schools. The East Baton Rouge Parish School Board will honor only those choices which promote a desegregated enrollment at Goodwood, DuFrocq or Cedarcrest, or

2. Shall attend Broadmoor or Goodwood in accordance with the neighborhood attendance zones of those schools set forth in Appendix A to this plan (see footnote 6).

6/ As noted above, students attending schools other than magnet schools will attend school in accordance with student assignments in effect from applicable court orders, until present reassignment patterns are phased out.

(c) Those students currently attending LaSalle Elementary School who reside in the Goodwood, DuFrocq, or Cedarcrest attendance zones and choose not to participate in or are not admitted to the LaSalle fundamental magnet program, shall attend either Goodwood, DuFrocq, or Cedarcrest Elementary Schools. The East Baton Rouge Parish School Board will honor a choice by such students for and assign such students to one of these schools only when it promotes a desegregated enrollment therein, within the capacity of each school.

3. Capitol High School Program

In order to maximize the opportunities for students throughout the East Baton Rouge Parish school system, and especially for those residing in the Capitol High School attendance zone, to qualify for the Capitol Technical Magnet to be implemented in the 1985-1986 school year (see below), the East Baton Rouge Parish School Board shall, by May 1, 1983, do the following with regard to the Capitol Technical Magnet:

1. Establish and publicize to all seventh grade students in the Parish system a full description of all programmatic aspects of the Capitol Technical Magnet, including the objectives of the educational program, a listing of course offerings, new facilities and equipment to be made available, and any educational prerequisites for admission.

2. Explain clearly to those students the eligibility requirements for admission in 1985-1986 to Capitol Magnet School.

3. Inform those students that prerequisite courses for admission to Capitol will, beginning with the fall term, 1983, be made available at all schools in the Capitol attendance zone which serve seventh grade students and, at the discretion of the School Board, at other such schools in the system. Consistent with the published notice, the School Board shall make such courses available.

B. 1984-1985 School Year

Beginning with the 1984-1985 school year, the School Board shall do the following:

1. Park Elementary School

(a) The School Board shall establish the Math/Science/Computer/Montessori Pre-School Magnet Program at Park Elementary School. The projected racial enrollment of this school shall be 55% white and 45% black, ±2.5 percentage points, and students for this school shall be chosen by the Board from among applicants for this program in such a way as to achieve this projected enrollment. For the first year of operation of

this program, enrollment priority shall be given to those students who were enrolled in Park Elementary School at the end of the 1983-1984 school year, so long as such priority does not impede the achievement of the projected racial occupancy. Admission of all other students in the first year and of all new students in subsequent years to the magnet school will be determined by enrollment priorities and random selection.

(b) Those students residing in the current Park Elementary School attendance zone who choose not to participate in or are not admitted to the Park Magnet Program shall attend DuFrocq, Delmont, Bernard Terrace, or Eden Park Elementary Schools in accordance with the neighborhood attendance zones of those schools set forth in Appendix A to this plan (see footnote 6, p. 33).

2. Cedarcrest-Southmoor Elementary School

(a) The School Board shall establish the Music and Arts Magnet Program at Cedarcrest Southmoor Elementary School. The projected racial enrollment of this school shall be 55% white and 45% black, ± 2.5 percentage points, and students from this school shall be chosen by the Board from among applicants for this program in such a way as to achieve this projected enrollment. For the first year of operation of this magnet program, enrollment priority shall be given to those students enrolled in Cedarcrest-Southmoor Elementary School at the end of the 1983-1984 school year, so long as such priority does not impede the achievement of the projected racial occupancy. Admission of all other students in first year and of all new students in subsequent years to the magnet school will be determined by enrollment priorities and random selection.

(b) Those students who attend Cedarcrest-Southmoor Elementary School at the end of the 1983-1984 school year, and new students in the East Baton Rouge Parish School System, who reside in the current Cedarcrest-Southmoor attendance and choose not to participate in or are not admitted to the Cedarcrest Music and Arts Magnet Program:

1. May choose within capacity limits to attend either Goodwood or DuFrocq Elementary Schools. The East Baton Rouge Parish School Board will honor only those choices which promote a desegregated enrollment at Goodwood or DuFrocq, or

2. Shall attend Jefferson Terrace, Audubon or Westminster Elementary Schools in accordance with the neighborhood attendance zones of those schools set forth in Appendix A to this plan (see footnote 6, p. 33).

(c) Those students attending Cedarcrest-Southmoor Elementary School at the end of the 1983-1984 school year who

reside in the Goodwood or DuFrocq attendance zones and choose not to participate in or are not admitted to the Cedarcrest Music and Arts Magnet Program will attend either Goodwood or DuFrocq Elementary Schools. The East Baton Rouge Parish School Board will honor a choice by such students for and assign such students to one of these schools only when it promotes a desegregated enrollment therein, within the capacity of each school.

3. La Belle Aire Elementary School

(a) The School Board shall establish an Intercultural Language Magnet at La Belle Aire Elementary School. The projected racial enrollment of this school shall be 55% white and 45% black, ±2.5 percentage points, and students for this school shall be chosen by the Board from among applicants for this program in such a way as to achieve this projected enrollment. For the first year of operation of this magnet program, enrollment priority shall be given to those students enrolled in La Belle Aire Elementary School at the end of the 1983-1984 school year, so long as such priority does not impede the achievement of the projected racial occupancy. Admission of all other students in the first year and of new students in subsequent years to the magnet school will be determined by enrollment priorities and random selection.

(b) Those students attending La Belle Aire Elementary School at the end of the 1983-1984 school year, and new students in the East Baton Rouge Parish School system, who reside in the current La Belle Aire attendance zone and choose not to participate in or are not admitted to the La Belle Aire Intercultural Language Magnet Program:

1. May choose within capacity limits to attend either Forest Heights, Glen Oaks Park or Greenbrier Elementary Schools. The East Baton Rouge Parish School Board will honor only those choices which promote a desegregated enrollment at Forest Heights, Glen Oaks Park or Greenbrier, or

2. Shall attend Red Oaks or Greenbrier Elementary Schools in accordance with the neighborhood attendance zones of those schools set forth in Appendix A to this plan (see footnote 6, p. 33).

(c) Those students attending La Belle Aire Elementary School at the end of the 1983-1984 school year who reside in the Forest Heights, Glen Oaks Park or Greenbrier attendance zones and choose not to participate in or are not admitted to the La Belle Aire Intercultural Language Magnet Program will attend either Forest Heights, Glen Oaks Park or Greenbrier Elementary Schools. The East Baton Rouge Parish School Board will honor a choice by such students for and assign such students to one of these schools only when it promotes a desegregated enrollment therein, within the capacity of each school.

4. Sherwood Middle School

(a) The School Board shall establish a Computer Magnet Program at Sherwood Middle School. The projected racial enrollment of this school shall be 55% white and 45% black, ±2.5 percentage points, and students for this school shall be chosen by the Board from among applicants for this program in such a way as to achieve this projected enrollment. For the first year of operation of this magnet program, enrollment priority shall be given to those students enrolled in Sherwood Middle School at the end of the 1983-1984 school year, so long as such priority does not impede the achievement of the projected racial occupancy. Admission of all other students in the first year and of all new students in subsequent years to the magnet school will be determined by enrollment priorities and random selection.

(b) Those students attending Sherwood Middle School at the end of the 1983-1984 school year who choose not to participate in or are not admitted to the Sherwood Computer Magnet Program shall attend middle school in accordance with the middle school attendance zones set forth in Appendix B and illustrated in Appendix D to this plan.

5. Scotlandville High School

(a) The School Board shall establish the Scotlandville Academy magnet program at Scotlandville High School. The projected racial enrollment of this school shall be 55% white and 45% black, ±10 percentage points, and students for this school shall be chosen by the Board from among qualified 7/ applicants for this program in such a way as to achieve this projected enrollment. For the first year of operation of this magnet program, enrollment priority shall be given to those qualified students enrolled in Scotlandville High School at the end of the 1983-1984 school year, so long as such priority does not impede the achievement of the projected racial occupancy. Admission of all other qualified students in the first year and of all new qualified students in subsequent to the magnet school in the second year of its operation will be determined by enrollment priorities and random selection.

(b) Those students attending Scotlandville High School at the end of the 1983-1984 school year who choose not to participate in or are not admitted to the Scotlandville Academy

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7/ "Qualified" students refers to those students who have been determined eligible for admission to the Scotlandville program pursuant to an entrance examination established by the Board for the school.

Magnet Program shall attend high school in accordance with the high school attendance zones set forth in Appendix C and illustrated in Appendix D to this plan.

C. 1985-1986 School Year

Beginning with the 1985-1986 school year, the School Board shall do the following:

1. Middle Schools

Subject to Part IV below, close Broadmoor and Scotlandville middle schools and implement the middle school plan that uses the residential attendance zones set forth in Appendix B.

2. Crestworth Elementary School

(a) The School Board shall establish a Computer/ Math/Science Magnet Program at Crestworth Elementary School. The projected racial enrollment of this school shall be 55% white and 45% black, ±2.5 percentage points, and students for this school shall be chosen by the Board from among applicants for this program in such a way as to achieve this projected enrollment. For the first year of operation of this magnet program, enrollment priority shall be given to those students who were enrolled in Crestworth Elementary School at the end of the 1984-1985 school year, so long as such priority does not impede the achievement of the projected racial occupancy. Admission of all other students in the first year and of all new students in subsequent years to the magnet school will be determined by enrollment priorities and random selection.

(b) Those students residing in the current Crestworth Elementary School attendance zone who choose not to participate in or are not admitted to the Crestworth Magnet Program shall attend Ryan, Progress, or Beechwood Elementary Schools in accordance with the neighborhood attendance zones of those schools set forth in Appendix A to this plan (see footnote 6, p. 33).

3. Broadmoor High School

(a) The School Board shall establish a magnet school at Broadmoor High School. The projected racial enrollment of this school shall be 55% white and 45% black, ±2.5 percentage points, and students for this school shall be chosen by the Board from among applicants for this program in such a way as to achieve this projected enrollment. For the first year of operation of this magnet program, enrollment priority shall be given to those students who were enrolled in Broadmoor High School at the end of the 1984-1985 school year, so long as such priority does not impede the achievement of the projected racial enrollment. Admission of all other students in the first year and of all

new students in subsequent years to the magnet school will be determined by enrollment priorities and random selection.

(b) Those students attending Broadmoor High School at the end of the 1984-1985 school year who choose not to participate in or are not admitted to the Broadmoor Magnet Program shall attend high school in accordance with the high school attendance zones set forth in Appendix C to this plan.

4. Capitol High School

(a) The School Board shall establish a Technical Career Magnet Program at Capitol High School. The projected racial enrollment of this school shall be 55% white and 45% black, ±2.5 percentage points, and students for this school shall be chosen by the Board from among qualified[8/] applicants for this program in such a way as to achieve this projected enrollment. For the first year of operation of this magnet program, enrollment priority shall be given to those qualified students enrolled in Capitol High School at the end of the 1984-1985 school year, so long as such priority does not impede the achievement of the projected racial occupancy. Admission of all other qualified students in the first year and of all new qualified students in subsequent years to the magnet school will be determined by enrollment priorities and random selection.

(b) Those students attending Capitol High School at the end of the 1984-1985 school year who choose not to participate in or are not admitted to the Capitol Magnet Program shall attend high school in accordance with the high school attendance zones set forth in Appendix C to this plan.

D. 1986-1987 School Year

Beginning with the 1986-1987 school year the School Board shall, subject to part IV below, implement the elementary school plan using the residential attendance zones set forth in Appendix A.

E. 1987-1988 School Year

Beginning with the 1987-1988 school year the School Board shall, subject to part IV below, implement the high school plan using the residential attendance zones set forth in Appendix C.

8/ "Qualified" students refers to those students who meet the admission requirements for this school as established by the Board.

III. Specific Timetable for Implementation

School Board support of this program is the single most critical element of its success. Each magnet school must be carefully planned and publicized to maximize its success as an educational and desegregative device. To adequately plan for changes necessarily contemplated by the Incentives Plan, the School Board shall adhere to the following timetable, and shall inform the Court of its progress towards successful implementation by filing at each deadline a report with the Court, with service on all parties, which states what they have done to meet each deadline. The School Board must state good cause for missing any deadline, and the Board's progress in adhering to the timetable may at any Court hearing be used to indicate the degree to which the Board can effectively implement the alternative plan. Attached to the Board's reports will be copies of the written advertisments, and descriptions of other advertisements, used between reporting dates. At any time a party may move the Court for appropriate relief if it appears that the School Board is not fully and responsibly implementing this plan.

Within five days of the Court approving the over-all plan contained herein, the Board shall publicly announce and generally describe all magnet schools and the year in which each is scheduled to open. Otherwise, the Board shall, at minimum, take the following actions at the following times:

February 18 - March 1, 1983: Contact LSU and Southern Universities to arrange adequate support for the laboratory school at Tanglewood.

>> Complete curricula and facilities planning for Tanglewood and LaSalle.

>> Establish the educational prerequisites necessary for admission to the Capitol Magnet in Fall 1985. Survey each school serving seventh grade students to determine where such courses are and are not available, and establish a plan for making such courses available in Fall 1983 consistent with part II(A)(3) above.

>> Contract for faculty and staff training in team learning, to be completed between August 1 and August 15 for Tanglewood and LaSalle.

March 1, 1983: Announce and publicize a description of the Fall 1983 magnet schools at Tanglewood and LaSalle, and a description of the Capitol magnet school to open Fall 1985. Include in the announcement and publicity for Capitol the prerequisites for admission, and the seventh grade curriculum improvements to be made in 1983 to prepare students to be admitted to Capitol when it opens. As part of these announcements make available to presen

seventh grade students information on the necessary prerequisites and how each student can arrange to qualify for admission to Capitol in Fall 1985, by electing such prerequisites at his or her school in Fall 1983 and/or Fall 1984. Make available and publicize the availability of guidance counseling for seventh grade students about the educational opportunity Capitol represents and whether it is appropriate for each student. Guidance will be available each year, and remain available at least through the enrollment period for classes offered in the coming fall.

>> Request, by public announcement, applications from faculty and administrators interested in (1) working at Tanglewood and LaSalle magnet schools, or (2) interested in planning curriculum and facilities for the Fall 1985 opening of Capitol magnet, and in hiring other faculty for that school.

March 30, 1983: Select from among the applicants solicited on March 1 all faculty, principals, and staff necessary for Tanglewood and LaSalle.

>> Select a principal and core group of faculty and staff to plan the curriculum and facility for Capitol, and to assist in hiring faculty members for that school.

>> Publicize details about the Tanglewood and LaSalle magnet schools in local media. Write and disseminate written materials created especially to promote those magnet schools as an educational and desegregative device. Publicity and community relations are explained in greater detail below, but generally all advertising and materials shall be calculated to explain to all students and parents in the Parish the choices available to each student and what must be done to apply for the magnet schools, with information about applicable dates, rules governing admission and operation of each school, faculty selection, and educational objective. Prominently displayed should be one or more sources in the system where more detailed information can be obtained.

April 15, 1983: Deadline for students to apply for Fall 1983 magnet schools.

April 29, 1983: Complete negotiations with LSU and Southern on staffing and coordination necessary for Tanglewood.

>> Announce all students admitted to Fall 1983 magnet schools and those on waiting lists, by race. If the school is under-capacity because insufficient students of one race have applied, persons on the waiting list will be informed that until capacity is reached, they can be admitted to the school if other-race students sufficient to form an admission block can be recruited to apply to the school.

May 16, 1983: Announce scheme for providing each student admitted to a magnet school with transportation to the school, as determined by Ecotran.

May 30, 1983: Order all supplies for 1983 magnet schools.

>> Request applicants from faculty and administrators for a group to develop curriculum and facility for magnets to be opened in 1984: Scotlandville, Sherwood, Cedarcrest, Park, and La Belle Aire.

June 1 - August 15, 1983: Select principal and faculty comprising the core committees to develop curriculum and facility for each Fall 1984 magnet school.

July 22, 1983: Have all equipment and supplies for Tanglewood and LaSalle in place and ready to use.

August 1 - August 15, 1983: Complete all teacher training necessary for team learning in LaSalle and Tanglewood, and any other relevant in-service training for faculty and staff.

>> Update transportation scheme to incorporate any students admitted from waiting lists since May.

September 30, 1983: Announce all 1984 magnet schools: Scotlandville, Sherwood, Park, La Belle Aire, Cedarcrest.

>> Describe and publicize programs to be available at each school and announce a schedule for all necessary renovations, to be completed by February 15, 1984. Invite applications from faculty interested in teaching in each magnet school; interview and select all faculty by January 10, 1984.

November 15, 1983: Complete the first set of tests for Fall 1984 admission to Scotlandville.

December 15, 1983: Announce results of first tests for admission to Scotlandville magnet school. Admit all students who qualify and, if space is available, announce second test date of March 1, 1984.

January 10, 1984: Announce faculty for each Fall 1984 magnet school.

February 15, 1984: Complete all renovations to each Fall 1984 magnet school.

March 1, 1984: Second admission test for Scotlandville.

March 15, 1984: Have all equipment purchased, installed, and ready to use for each Fall 1984 magnet school.

>> Distribute literature and publicize to all students and parents the magnet school choices available to each student for Fall 1984.

April 3, 1984: Announce results of second admission test for Scotlandville. Admit students to available space, and establish waiting lists.

April 17, 1984: Deadline for student applications for magnet schools opening Fall 1984.

April 30, 1984: Announce student assignments to all magnet schools for Fall 1984. Establish waiting lists for each school, by race.

May 15, 1984: Establish transportation routes for each student in each magnet school, as provided by Ecotran.

May 30, 1984: Announce magnet schools to open Fall 1985.

>> Request applications from interested faculty and administrators to develop the curriculum and facility of each Fall 1985 magnet school.

June 1 - August 15, 1984: Select core group of faculty and administrators to develop the curriculum and facility of each Fall 1985 magnet school.

August 1 - August 15, 1984: Conduct inservice training for faculty and staff, including training necessary for teaching team learning in all magnet school to operate Fall 1984.

>> Supplement transportation routes to accommodate students admitted to magnet schools from waiting lists.

September 30, 1984: Announce all Fall 1985 magnet schools.

>> Describe and publicize programs to be available at each Fall 1985 magnet school and announce a schedule for all necessary renovations, to be completed by February 15, 1985.

>> Invite applications from faculty interested in teaching at each magnet school; interview and select all faculty by January 10, 1985.

November 15, 1984: Complete the first set of tests for Fall 1985 admission to Scotlandville.

December 15, 1984: Announce results of first tests for admission to Scotlandville magnet school. Admit all students

who qualify and, if space is available, announce second test date of March 1, 1986.

January 10, 1985: Announce all faculty for Fall 1985 magnet schools.

February 15, 1985: Complete all renovations to each Fall 1985 magnet school.

March 1, 1985: Second admission test for Scotlandville.

March 15, 1985: Have all equipment purchased, installed, and ready to use for Fall 1985 magnet schools.

>> Distribute literature and publicize to all students and parents the magnet school choices available to each student for Fall 1985.

April 1, 1985: Announce results of second admission test for Scotlandville. Admit students to available space, and establish waiting lists.

April 17, 1985: Deadline for student applications for magnet schools operating Fall 1985.

April 30, 1985: Announce student assignments to all magnet schools for Fall 1985. Establish waiting lists for each school, by race. If the school is under capacity because insufficient students of one race have applied, persons on the waiting list will be informed that until capacity is reached, they can be admitted to the school if other-race students sufficient to form an admission block can be recruited to apply to the school.

May 15, 1985: Establish transportation routes for each student in Fall 1985 magnet schools, as provided by Ecotran.

August 1 - August 15, 1985: Conduct inservice training for faculty and staff, including training necessary for teaching team learning in all magnet schools to operate in Fall 1985.

>> Supplement transportation routes to incorporate students admitted to magnet school from waiting lists.

November 15, 1985: Complete first set of tests for Fall 1986 admission to Scotlandville magnet school.

December 15, 1985: Announce results of first tests for admission to Scotlandville magnet school. Admit all students who qualify and, if space is available, announce second test date of March 1, 1986.

March 1, 1986: Second test for Fall 1986 admission to Scotlandville.

After phasing is completed, certain dates will continue to be significant each year for the magnet schools. They are, for each academic year:

August 1 to 15:	Conduct inservice training for the imminent school year. Incorporate into transportation routes any students admitted from waiting lists.
September 30:	Complete core curriculum and facility development and announce any new magnet school to open in the subsequent year.
November 15:	Complete first test for admission in the subsequent Fall to Scotlandville magnet.
December 15:	Announce results of first Scotlandville admission test, and whether a second test will be held March 1 of the subsequent year.
January 10:	Announce all faculty for Fall magnets.
February 15:	Complete all renovations for Fall magnets.
March 1:	Administer second admission test for Scotlandville magnet.
March 15:	Have all equipment for Fall magnets purchased, installed, and ready to use.
April 1:	Results of second admission test and admissions for Fall to Scotlandville announced.
April 15:	Deadline for student applications for Fall magnets.
April 30:	Announce students assigned to each magnet school to operate that Fall, and establish waiting lists by race for each.
May 15:	Announce transportation routes for Fall magnet schools.
May 30:	Announce any magnet school opening the subsequent Fall, and solicit core group of faculty and administrators for curriculum and facility development.

June 1 to August 1: Select core group of faculty and administrators to develop the curriculum and facility for each magnet school to open in the Fall of the subsequent year.

IV. Phasing Out The Present Plan

The magnet schools which comprise this plan are, for reasons of maximizing stability and minimizing disruption of students, implemented in conjunction with the present student assignment plan. Generally, each magnet school will have two full academic years to establish itself as a desegregated school operating at a reasonable capacity prior to the dismantling of the present assignment patterns.

Attached as Appendices A-D are descriptions and illustrations of contiguous school zones for elementary, middle, and high schools. Projecting present enrollment patterns, these zones, when implemented according to the schedules in this plan will produce levels of desegregation which are competitive with the present student assignment plan, eliminate the amount of transportation currently attributable to mandatory reassignment patterns, and, by reducing the amount of excess capacity at the middle school level through school closings, make available to the School Board additional funds for offsetting the costs of magnet school implementation and operation. After all phasing is complete, student assignment will be based on residential attendance areas except where a student voluntarily chooses to attend another school available to him or her.

The Incentives Plan contemplates the end of present student assignments for middle schools in Fall 1985, elementary schools in Fall 1986, and high schools in Fall 1987. Prior to the relevant school year, and assuming the School Board vigorously supports the plan and the magnet schools meet the criteria set forth below, the United States will jointly move with the School Board to modify student assignment consistent with the this plan. If all magnet schools are not successful it will require the fullest explanation by the School Board to the Court and the parties to the litigation.

A magnet school shall be deemed successful if it has met the following criteria:

(a) for those magnet schools in their second year of operation at the time of the Board's request for Court modification of student assignment:

(1) Achieving the projected racial enrollment of 55% white, 45% black, +2.5 percentage points (±10 percentage points for Scotlandville), and

(2) Operating at least at 80% of capacity at the time of the School Board's request, and

(b) for Sherwood computer magnet and Crestworth computer magnet, which will each be in the first year of operation at the time the School Board seeks modification of student assignments:

(1) Achieving the projected racial enrollment of 55% white and 45% black, ±2.5 percentage points, and

(2) if the other computer magnet school (Park) is successful, operating at a capacity comparable to that school's capacity at the same stage of operation.

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Table 1

School District Racial Segregation, 1980-1982

	% White	School Segregation (D)*	%White in Average Black Child's School (Sbw)**
District			
1980	58	66	28
1981	55	51	35
1982	52	32	42
Elementary (K-5)			
1980	57	72	24
1981	53	41	38
1982	48	38	36
Middle			
1980	59	57	32
1981	57	58	32
1982	51	20	48
High			
1980	60	65	28
1981	58	59	32
1982	57	30	47

* Perfect racial balance = 0; perfect racial imbalance = 100.

** Extent of interracial exposure; can be no higher than the percent white in the school district or in the category examined.

Table 2

Relationship Between Percent Black in One Year and Percent Black in Other Years

	% Black 1981 r	% Black 1982 r
All Schools		
% Black 1980	.87	.70
% Black 1981		.82
Elementary Schools		
% Black 1980	.86	.74
% Black 1981		.95
Middle Schools		
% Black 1980	.99	.41
% Black 1981		.42
High Schools		
% Black 1980	.93	.85
% Black 1981		.92

All correlations at .01 or better.

Table 3

Relationship between Racial characteristics of Schools*

	1980 % Black Teachers r	1981 % Black Teachers r	1982 % Black Teachers r	Black Princ. 1980 r	Black Princ. 1981 r
All Grades					
% Black Students 1980	.57	.56	.58	.74	.44
% Black Students 1981	.47	.57	.50	.67	.44
% Black Students 1982	.38	.40	.49	.51	.42
Elementary Schools					
% Black Students 1980	.62	.46	.66	.74	.40
% Black Students 1981	.56	.48	.65	.66	.41
% Black Students 1982	.49	.43	.60	.55	.37
Middle Schools					
% Black Students 1980	.73	.79	.38	.67	.35
% Black Students 1981	.75	.80	.40	.68	.34
% Black Students 1982	.58	.44	.47	.22	.37
High Schools					
% Black Students 1980	.21	.88	.66	.87	.74
% Black Students 1981	.12	.76	.50	.75	.63
% Black Students 1982	.08	.78	.54	.72	.65

* All correlations significant at .001 or better.

Table 4
Classroom Racial Segregation
1982

School Name	1982 Classroom Segregation*
$\bar{X}$ DISTRICT	.27
$\bar{X}$ ELEMENTARY	.24
$\bar{X}$ MIDDLE	.30
$\bar{X}$ HIGH	.33
Elementary	
Audubon	.35
Bakerfield	.16
Baker Heights	.23
Banks	.79
Beechwood	.18
Belfair	.40
Bellingrath Hills	.27
Bernard Terrace	.49
Broadmoor	.18
Brookstown	.20
Brownfields	.19
Buchanan	.58
Cedarcrest/Southmoor	.28
Claiborne	.15
Crestworth	**
Dalton	.33
Delmont	.13
Dufrocq	.60
Eden Park	.33
Forest Heights	.24
Glen Oaks Park	.07
Goodwood	.06
Greenbriar	.16
Greenville	.33
Harding	.30
Highland	.30
Howell Park	.13
Jefferson Terrace	.15
La Belle Aire	.26
Lanier	.08
LaSalle	.10
Magnolia Woods	.20
Mayfair	.13
Melrose	.14
Merrydale	.14
Nicholson	.20
Northdale	.16

* 0=perfect racial balance; 1.00=perfect racial imbalance.

** Not enough of a race to calculate an index.

Table 4
Classroom Ra ial Segregation
1982
(continued)

School Name	1982 Classroom Segregation*
Northeast	.10
North Highlands	.13
Northwestern	.12
Park	.69
Park Forest	.17
Park Ridge	.31
Parkview	.64
Polk	**
Progress	.33
Red Oaks	.21
Riveroaks	.79
Ryan	.36
Sharon Hills	.12
Shenandoah	.22
South Boulevard	.23
Tanglewood	.20
Twin Oaks	.58
University Terrace	.03
Villa del Rey	.05
Walnut Hills	.10
Wedgewood	.69
Westdale	.22
Westminster	.49
White Hills	.19
Wildwood	.11
Winbourne	.18
Zachary	.17
Middle Schools	
Baker	.24
Broadmoor	.43
Capitol	.35
Central	.29
Crestworth	.21
Glasgow	.26
Glen Oaks	.23
Istrouma	.24
Kenilworth	.28
McKinley	.21
Northwestern	.40
Park Forest	.43
Prescott	.18
Scotlandville	.27
Sherwood	.37

* 0=perfect racial balance; 1.00=perfect racial imbalance.
** Not enough of a race to calculate an index.

Table 4
Classroom Racial Segregation
1982
(continued)

School Name	1982 Classroom Segregation*
Southeast	.34
Valley Park	.35
Westdale	.37
High Schools	
Baker	.27
Baton Rouge	.31
Belaire	.29
Broadmoor	.39
Central	.34
Capitol	.62
Glen Oaks	.25
Istrouma	.24
McKinley	.41
Northeast	.25
Robert E. Lee	.24
Scotlandville	.38
Tara	.30
Woodlawn	.30
Zachary	.37

---

* 0=perfect racial balance; 1.00=perfect racial imbalance.

** Not enough of a race to calculate an index.

Table 5

White Enrollment Trends, 1975-1982

Year	Actual Enrollment	Actual Loss Rate	Predicted [a] Enrollment	Predicted [a] Loss Rate
Grades 1-5				
1975	14,804			
1976	15,336	3.6		
1977	15,680	.2		
1978	15,477	-1.3		
1979	14,965	-3.3		
1980	13,877	-7.3	14,097	-5.8
1981	12,148	-12.5	12,983	-7.9
1982	9,591	-21.0	11,565	-10.9
Total loss 1982-1979: 5,374				
Total loss 1982-1979 due to desegregation: 1,974 [b]				
% of total loss due to desegregation: 36%				
Grades 6-8				
1975	9,989			
1976	9,569	-4.2		
1977	9,233	-3.5		
1978	8,876	-3.9		
1979	8,736	-1.6		
1980	8,658	- .9		
1981	7,446	-14.0	8,632	- .3
1982	6,485	-12.9	8,684	.6
Total loss 1982-1980: 2,173				
Total loss 1982-1980 due to desegregation: 2,199				
% of total loss due to desegregation: 101%				

(Table 5 cont.)

Year	Actual Enrollment	Actual Loss Rate	Predicted Enrollment	Predicted Loss Rate
Grades 9-12				
1975	13,108			
1976	13,198	.1		
1977	13,205	0		
1978	12,976	- 1.7		
1979	12,378	- 4.6		
1980	11,765	- 4.9		
1981	10,838	- 7.9	10,988	- 6.6
1982	9,672	-10.8	10,098	- 8.1

Total loss 1982-1980: 2,093

Total loss 1982-1980 due to desegregation: 426

% of total loss due to desegregation: 21%

Grades 1-12				
1975	37,901			
1976	38,103	.5		
1977	38,118	0		
1978	37,329	- 2.1		
1979	36,079	- 3.3		
1980	34,300	- 4.9	34,419	- 4.6
1981	30,432	-11.3	32,354	- 6.0
1982	25,748	-15.4	29,992	- 7.3

Total loss 1982-1979: 10,[illegible]51

Total loss 1982-1979 [illegible]e to desegregation: 4,244

% of total loss due to desegregation: 41%

(Table 5 cont.)

Grades K-12	Actual		Predicted	
Year	Enrollment	Loss Rate	Enrollment	Loss Rate
1975	41,554			
1976	41,859	.7		
1977	41,317	- 1.2		
1978	40,317	- 2.6		
1979	39,379	- 2.3		
1980	37,220	- 5.5	37,804	- 4.0
1981	32,974	-11.4	37,914	- 5.0
1982	29,179	-11.5	33,759	- 6.0

Total loss 1982-1979: 10,200

Total loss 1982-1979 due to desegregation: 4,580

% of total loss due to desegregation: 45%

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[a]Calculated by predicting the 1980-82 loss rate from the 1976-1979 loss rate trend, and then estimating white enrollment from that loss rate using the 1979 enrollment as the base.

[b]The "normal" predicted enrollment minus the actual enrollment.

Table 6

White Enrollment Trends, 1975-1982

Summary Grades 1 - 12 (excluding kindergarten and spec. ed.)

Total loss since desegregation (1982-1979):	9,640
Total loss due to desegregation:	4,599
% of total loss due to desegregation:	48 %

Summary Grades K-12 (including spec. ed.)

Total loss since desegregation (1982-1979):	10,200
Total loss due to desegregation:	4,580

Loss due to desegregation composed of:

Anticipatory white flight:	220	(elem, 1980)
	1,336	(second., 1981)
	1,556	
Implementation white flight:	835	(elem., 1981)
	2,625	(second., 1982)
	3,460	
Post-implementation flight:	919	(elem., 1982)

(est. from the separate analysis of each grade level)

Yearly loss due to desegregation:

1980	220
1981	1,951
1982	2,428
	4,599

(est. from the combined analysis 1 - 12)

Table 7
White Enrollment Loss 1981, 1982
and Reassignments 1981, 1982

School Name	1980 % Black	Imp.[a] % White Enroll. Loss	Post[b] Imp. % White Enroll. Loss	Imp.[a] % Black Reass	Imp.[a] % White Reass
Elementary					
Audubon	11.4	-6.3	-15.5	95.0	- 41.5
Bakerfield	34.7	-13.7	-5.1	18.7	6.5
Baker Heights	21.7	c	-5.4	c	c
Banks	99.8	300.0	-100.0	*	*
Beechwood	100.0	c	-29.2	c	c
Belfair	100.0	-60.9	-39.3	-113.3	100.0
Bellingrath Hills	2.5	10.1	-9.4	*	*
Bernard Terrace	32.0	-4.3	-16.3	36.4	1.4
Broadmoor	1.6	-20.3	-40.3	97.2	-48.1
Brookstown	17.5	-10.7	-13.4	83.0	-22.9
Brownfields	14.8	-3.2	-14.4	68.2	-37.5
Buchanan	99.6	-64.1	-4.2	-76.1	99.1
Cedarcrest	0.7	-11.7	-23.7	99.5	-76.7
Claiborne	41.4	-0.5	-8.2	**	**
Crestworth	100.0	c	c	*	*
Dalton	93.4	6.3	13.6	*	*
Delmont	74.1	-7.0	9.3	-24.0	38.3
Dufrocq	100.0	-52.1	5.7	-155.3	100.0
Eden Park	99.7	-74.8	35.0	-100.0	100.0
Forest Heights	91.3	-47.3	-19.5	-144.4	83.1
Glen Oaks Park	67.4	-46.4	-13.2	-51.7	49.2
Goodwood	6.3	-0.6	-19.5	92.2	13.4
Greenbriar	3.1	0.8	-21.4	91.9	-49.2
Greenville	77.4	-23.0	-0.7	-130.7	2.0
Harding	98.2	-58.5	1.7	-73.7	96.2
Highland	8.2	-12.9	-12.7	77.9	-125.7
Howell Park	66.8	-8.6	-31.6	-31.2	26.6
Jefferson Terrace	13.1	-43.5	-2.1	75.5	43.5
La Belle Aire	1.9	-0.4	-23.2	90.9	-146.6
Lanier	20.6	-1.7	-9.8	40.4	-51.1
LaSalle	8.3	-12.6	-18.4	87.8	7.8
Magnolia Woods	21.7	-7.6	-29.3	41.4	-92.4
Mayfair	42.3	c	-16.5	c	c
Melrose	60.2	-4.5	-13.4	**	**
Merrydale	73.9	-36.0	-7.3	38.7	56.2

* Designated racially isolated by court order.
** Designated desegregated by court order.
*** Magnet School
a 1981 for elementary schools; 1982 for secondary schools.
b Elementary schools only in 1982.
c Missing data.

Table 7
White Enrollment Loss 1981, 1982
and Reassignments 1981, 1982
(continued)

School Name	1980 % Black	Imp.[a] % White Enroll. Loss	Post[b] Imp. % White Enroll. Loss	Imp.[a] % Black Reass	Imp.[a] % Wnite Reass
Nicholson	86.6	0.0	39.5	*	*
Northdale	100.0	c	147.1	c	c
Northeast	25.9	-14.9	-2.3	43.6	43.6
North Highlands	15.5	-10.9	-17.5	78.1	-42.9
Northwestern	41.1	13.7	-10.4	**	**
Park	98.3	-11.1	0.0	*	*
Park Forest	1.0	0.4	-28.1	c	c
Park Ridge	6.9	5.0	-14.2	79.9	-108.8
Parkview	4.3	-10.9	-5.2	*	*
Polk	100.0	c	c	*	*
Progress	100.0	-65.0	-12.7	-78.0	100.0
Red Oaks	6.1	-10.9	-23.7	87.7	-67.2
Riveroaks	0.5	-14.8	-10.3	*	*
Ryan	99.2	-66.8	7.9	-98.1	98 9
Sharon Hills	29.7	-18.6	-15.7	39.1	-4.5
Shenandoah	4.6	-2.8	23.8	*	*
South Boulevard	99.5	c	63.9	c	c
Tanglewood	0.7	-11.4	-23.7	97.7	42.3
Twin Oaks	1.7	-8.5	-2.0	-33.3	-18.6
University Terrace	80.8	132.6	4.0	1.7	17.4
Villa del Rey	4.1	-5.6	-25.0	94.1	-69.7
Walnut Hills	55.1	-3.7	-25.9	-22.2	27.0
Wedgewood	1.2	-7.1	9.2	*	*
Westdale	71.4	-40.6	-20.2	-55.6	66.9
Westminster	3.6	-3.2	-5.6	88.8	-110.4
White Hills	10.7	1.2	-16.2	73.4	-95.4
Wildwood	20.3	-34.6	-0.8	-25.5	-22.2
Winbourne	48.0	-35.2	-24.1	**	**
Zachary	22.0	-24.5	14.0	47.5	-4.0
Middle Schools					
Baker	21.7	14.6		32.7	-116.2
Broadmoor	8.2	-4.1		58.7	-45.4
Capitol	100.0	-47.4		-76.2	100.00
Central	13.2	-19.3		56.1	-43.3
Crestworth	99.8	-25.4		-60.3	99.3
Glasgow	18.6	-21.4		16.6	-38.2

* Designated racially isolated by court order.
** Designated desegregated by court order.
*** Magnet School.
a 1981 for elementary schools; 1982 for secondary schools.
b Elementary schools only in 1982.
- Missing data.

Table 7
White Enrollment Loss 1981, 1982
and Reassignments 1981, 1982
(continued)

School Name	1980 % Black	Imp.[a] % White Enroll. Loss	Post[b] Imp. % White Enroll. Loss	Imp.[a] % Black Reass	Imp.[a] % White Reass
Glen Oaks	79.7	-17.6		3.3	66.7
Istrouma	32.6	***		***	***
Kenilworth	29.7	-21.5		38.2	-196.6
McKinley	95.9	***		***	***
Northwestern	42.1	-0.3		35.4	9.8
Park Forest	42.2	-46.4		46.0	47.0
Prescott	58.3	-14.4		-20.4	7.9
Scotlandville	99.4	-63.0		-172.1	97.6
Sherwood	2.7	-12.7		94.8	-93.4
Southeast	4.1	-11.8		80	109.9
Valley Park	35.7	-36.5		22.7	26.1
Westdale	58.1	-29.4		-20.4	51.5
High Schools					
Baker	27.0	2.7		39.6	-14.9
Baton Rouge	16.7	***		***	***
Belaire	17.7	1.7		39.2	-27.0
Broadmoor	3.5	-11.2		80.6	-71.0
Capitol	98.8	-78.0		*	*
Central	14.5	1.3		52.5	-36.0
Glen Oaks	58.3	-20.7		-5.1	48.2
Istrouma	70.5	-21.1		-43.4	27.5
McKinley	98.9	-54.5		-100.0	98.6
Northeast	91.2	c		c	c
Robert E. Lee	30.5	1.7		12.8	-9.6
Scotlandville	99.9	***		***	***
Tara	18.9	4.3		54.2	-23.1
Woodlawn	4.1	3.6		69.4	-35.7
Zachary	44.0	0.4		-1.3	17.1

* Designated racially isolated by court order.
** Designated desegregated by court order.
*** Magnet School.
a 1981 for elementary schools; 1982 for secondary schools.
b Elementary schools only in 1982.
c Missing data.

Table 8

White Enrollment Loss Rates[a] for Schools of Varying 1980 Racial Composition

	Implementation[b] Year	Post-[c] Implementation Year
	%	%
All Schools		
≥ 90% black	- 58	14
≥ 35% and <90% black	- 13	- 12
< 35% black	- 8	- 14
Elementary Schools		
≥ 90% black	- 61	14
≥ 35 and <90% black	- 7	- 12
< 35% black	- 10	- 14
Middle Schools		
≥ 90% black	- 45	
≥ 35 and <90% black	- 24	
< 35% black	- 11	
High Schools		
≥ 90% black	- 67	
≥ 35 and <90% black	- 14	
< 35% black	3	

[a] Percentage of white students who did not enroll at their assigned school.
[b] 1981 for elementary schools; 1982 for secondary schools.
[c] 1982; elementary schools only.

Table 9

Partial Correlations Between White Enrollment Change and School Characteristics Controlling for Percent Black 1980, 1981

	Implem. Year % Black 1980		Post-Implem. Year % Black 1981	
	Formerly Black Schools	Formerly White Schools	Formerly Black Schools	Formerly White Schools
% Students free lunch 1980	.25	.18	.48*	.52*
Age of school	.07	-.06	.04	.01
Reading scores 1980	-.11	.04	-.40*	-.39*
Reading scores 1981	-.19	.04	-.36*	-.03
Math scores 1980	-.06	.01	-.40*	-.37
Math scores 1981	-.07	.07	-.36*	-.01
Size of school	-.24	-.08	.17	-.17
Busing time	.28	.74*	-.02	.42*
Busing distance	.26	.60*	.03	.45*
Black principal 1980	-.37*	a	.03	a
Black principal 1981	-.34	.15	-.15	-.30
Pupil/teacher ratio 1980	-.07	-.09	.01	.06
Pupil/teacher ratio 1981	-.07	-.14	.14	.11
Female principal 1980	.31	.07	-.08	-.25
Female principal 1981	.28	.20	-.13	-.28
# gift./talented class. 1981	.04	.10	.18	.16
# black M to M rec. 1981	-.01	.07	-.07	-.05
% black teachers 1980	.23	.17	.41*	.15
% black teachers 1981	-.00	-.04	.24	.09
Elem. magnet prog. 1981	-.25	a	.44*	a
Extended day magnet 1981	.84*	a	.84*	a
Special focus program 1981	-.31	.11	.01	-.06
Academic add-on prog. 1981	-.25	a	.44	a

*Significant at .05 or better.

[a]Insufficient degrees of freedom to calculate a correlation.

Table 10

Implementation Year White Enrollment Change[a]

	Formerly Black Schools			Formerly White Schools		
	$\bar{X}$[b]	b	Beta	$\bar{X}$[b]	b	Beta
Independent Variables						
% Black 1980 (standard error)	.65	-.548 (.299)	-.51	.30	-.282 (.243)	-.33
% Free Lunch 1980	.06	5.401 (3.359)	.42	.03	3.407 (2.971)	.33
Black Principal 1980[c]	.42	-.293 (.128)	-.41*	.17	d	
School Size	897	d		947	-.00005 (.00009)	-.09
Constant		-.104			-.053	
r2		.31			.05	

* Significant at the .05 or better level.

a 1981 for elementary schools; 1982 for secondary schools.

b In this table $\bar{X}$ percentages are expressed as proportions.

c 1 = yes, 0 = no.

d Not strong enough to remain in the equation.

Table 11

Post-Implementation Year White Enrollment Change
(elementary Schols Only)

	Formerly Black Schools			Formerly White Schools		
	$\bar{X}$[a]	b	Beta	$\bar{X}$[a]	b	Beta
Independent Variables						
% Black 1980 (standard error)	.65	b		.30	.240 (.047)	.24*
% Black 1981	.60	1.228 (.202)	.81*	.39	.183 (.064)	.12*
Black Principal 1981	.46	-.144 (.057)	-.21*	.29	b	
% Free Lunch	.06	-4.705 (1.791)	-.38*	.03	b	
School Size	898	-.0001 (.0000)	-.51*	947	-.0002 (.0000)	-.33*
Elem. magnet (1=yes, 0=no)	.08	.781 (.112)	.62*	.03	1.168 (.052)	.66*
Busing distance	3.5	-.023 (.011)	-.18	1.5	b	
Constant		-.076			-.051	
r2		.86			.98	

* Significant at .05 or better.
a In this Table $\bar{X}$ percentages are expressed as proportions.
b Not strong enough to remain in equation.

Table 12

Actual and Predicted Enrollment Change Under Current Plan, 1975-1987

ear	Enrollment Black	Enrollment White	Enrollment Total	% White	Sbw	Bl. Enr. Change	Wh. Enr. Change	A Enr. Change	B Enr. Change
)75	26,440	41,554	67,994	61.1					
)76	26,479	41,859	68,338	61.3		.001	.005		
)77	26,901	41,376	68,277	60.6		.016	-.001		
)78	26,849	40,317	67,166	60.0		-.002	-.026		
)79	26,697	39,379	66,076	59.6	25	-.006	-.023		
)80	26,859	37,220	64,079	58.1	28	.006	-.055	-.039	
)81	26,739	32,974	59,713	55.2	35	-.004	-.114	-.049	
)82	26,859	29,179	56,038	52.1	42	.004	-.115	-.060	
REDICTED									
983	26,832	26,203	53,035	49.4	41	-.001			-.102
984	26,778	23,871	50,649	47.1	40	-.002			-.089
985	26,698	22,057	48,755	45.2	39	-.003			-.076
986	26,591	20,667	47,258	43.7	38	-.004			-.063
987	26.491	19,613	46,104	42.5	37	-.004			-.051

White Enrollment Change

his is a linear prediction from the 1975-1979 loss rate trend.

White Enrollment Change -

his is a prediction from a linear least squares analysis of the ost-implementation loss rates of four southern countywide school districts: harlotte-Mecklenburg, Nashville, Montgomery, and Caddo parish (Shreveport).

Table 13
Enrollment and Transfer Data 1983,* 1987

	1983* Post-Transfer Enrollment				1987 Pre-Transfer Enrollment Adjusted for Enrollment Change, 1982-1987											
							Outcome 1					Outcome 2				
	Black	White	Proportion White	Capacity	Black	White	Transfers Black	Transfers White	Post-Transf. Enrollment Black	Post-Transf. Enrollment White	Proportion White	Add'l M-M Transfers Black	Add'l M-M Transfers White	Black	White	Proportion White
Elem. Schools																
Audubon	169	192	.532	567	22	520		-100	22	420	.950	100		122	420	.775
Bakerfield	228	241	.514	567	217	113	- 50		167	113	.404			167	113	.404
Baker Heights	345	222	.392	648	84	223		- 50	84	173	.673			84	173	.673
Banks	500	5	.009	594	436	5	- 50		386	5	.013	-100		286	5	.017
Beechwood	157	75	.317	432	531	6	-100		431	6	.014	-100		331	6	.018
Belfair	183	35	.160	432	329	0	- 50		279	0	.000	-150		129	0	.000
Bell.Hills	20	514	.962	648	23	415		-100	23	315	.932	100		123	315	.719
Bernard Terr.	233	179	.434	432	154	54			154	54	.260			154	54	.260
Broadmoor	164	124	.431	648	4	129		- 50	4	79	.952	50		54	79	.594
Brookstown	290	181	.384	567	87	159		- 50	87	109	.556			87	109	.556
Brownfields	276	247	.472	567	39	180		- 50	39	130	.769			39	130	.769
Buchanan	174	123	.414	513	384	12	- 50		334	12	.035	-100		234	12	.049
Cedarcrest*	180	243	.574	648			180	243	180	243	.574			180	243	.574
Claiborne	162	182	.529	486	290	168			290	168	.367			290	168	.367
Crestworth*	204	250	.551	567			204	250	204	250	.551			204	250	.551
Dalton	485	17	.034	567	565	30	- 50		515	30	.055	-100		415	30	.067
Delmont	332	127	.277	459	400	40	- 50		350	40	.103	-100		250	40	.138
Dufrocq	330	66	.167	459	432	9	-100		332	9	.026	-100		232	9	.037
Eden Park	326	63	.162	513	529	4	-100		429	4	.009	-100		329	4	.012
Forest Heights	194	128	.391	567	410	69	- 50	- 39	360	30	.077	-100		260	30	.103
Glen Oaks Park	189	142	.429	567	306	58	- 50		256	58	.185	-100		156	58	.271
Goodwood	141	154	.519	405	4	87		- 25	4	62	.912	50		54	62	.534
Greenbriar	196	229	.539	567	21	461		-150	21	311	.937	150		171	311	.645
Greenville	237	157	.398	702	719	9	-100		619	9	.014	-100		519	9	.017
Harding	197	67	.254	567	449	7			449	7	.015	-100		349	7	.020
Highland	123	135	.523	459	139	180		- 50	139	130	.483			139	130	.483
Howell Park	184	106	.365	486	239	77	- 50		189	77	.289			189	77	.289
Jefferson Terr.	150	343	.696	648	72	385		- 50	72	335	.823	150		222	335	.601

* Assumes, for sake of calculations, all proposed magnets implemented in Fall 1983.
Does not include 1983 white enrollment loss estimate shown in Table 1.

Table 13
(continued)

	1983* Post-Transfer Enrollment				1987 Pre-Tranfer Enrollment Adjusted for Enrollment Change, 1982-1987											
							Outcome 1						Outcome 2			
							Transfers		Post-Transf. Enrollment		Proportion	Add'l M-M Transfers				Proportion
	Black	White	Proportion White	Capacity	Black	White	Black	White	Black	White	White	Black	White	Black	White	White
La Belle Aire*	208	269	.563	648			208	269	208	269	.564			208	269	.564
Lanier	221	256	.537	567	136	276		-25	136	251	.649			136	251	.649
LaSalle*	175	182	.510	567			175	182	175	182	.510			175	182	.510
Magnolia Woods	135	112	.450	567	100	132			100	132	.569			100	132	.569
Mayfair	106	207	.661	431	219	250			219	250	.533			219	250	.533
Melrose	155	123	.440	324	155	100			155	100	.392			155	100	.392
Merrydale	257	175	.410	594	525	89	- 50		475	89	.158	-100		375	89	.192
Nicholson	391	49	.111	378	342	19	-100		242	19	.073	-100		142	19	.118
Northdale*	83	89	.520	216			83	89	83	89	.517			83	89	.517
Northeast	254	542	.680	1215	169	328		- 50	169	278	.622			169	278	.622
North Highland	222	133	.370	432	59	117		- 25	59	92	.609			59	92	.609
Northwestern	147	243	.623	486	222	321			222	321	.591			222	321	.591
Park*	253	309	.550	702			253	309	253	309	.550			253	309	.550
Park Forest	201	225	.528	648	3	184		- 25	3	159	.981	100		103	159	.607
Park Ridge	263	214	.449	567	37	236		- 50	37	186	.834	100		137	186	.576
Parkview	22	441	.952	648	24	394		-125	24	269	.918	100		124	269	.684
Polk	272	0	.0	486	542	27	- 50		492	27	.052	-100		392	27	.064
Progress	239	86	.260	648	713	1	- 50		663	1	.002	-100		563	1	.002
Red Oaks	224	175	.440	648	33	422		-100	33	322	.907	150		183	322	.638
Riveroaks	5	386	.987	621	5	357		-100	5	257	.981	100		105	257	.710
Ryan	233	67	.220	567	300	12	- 88		212	12	.054	- 50		162	12	.069
Sharon Hills	278	216	.437	59	271	269		- 80	271	189	.411			271	189	.411
Shenandoah	35	491	.933	567	29	431		- 75	29	356	.925	200		229	356	.609
South Blvd.*	116	117	.500	324			116	117	116	117	.502			116	117	.502
Tanglewood*	169	200	.542	648			169	200	169	200	.542			169	200	.542
Twin Oaks	11	328	.968	648	11	280		- 50	11	230	.954	100		111	230	.674
Univ. Terr.	248	242	.490	459	381	33	- 50		331	33	.091	- 50		281	33	.105
Villa Del Rey	226	158	.411	567	12	89			12	89	.881	50		62	89	.589

* Assumes, for sake of calculations, all proposed magnets implemented in Fall 1983. Does not include 1983 white enrollment loss estimate shown in Table 1.

Table 13
(continued)

	1983* Post-Transfer Enrollment				1987 Pre-Tranfer Enrollment Adjusted for Enrollment Change, 1982-1987										
							Outcome 1					Outcome 2			
	Black	White	Proportion White	Capacity	Black	White	Transfers Black	Transfers White	Post-Transf. Enrollment Black	Post-Transf. Enrollment White	Proportion White	Add'l M-M Transfers Black	Add'l M-M Transfers White	Black	White	Proportion White
Walnut Hills	203	149	.423	540	275	91	-50		225	91	.288			225	91	.288
Wedgewood	9	545	.984	648	8	475		-100	8	375	.979	100		108	375	.776
Westdale	175	104	.370	567	234	90	-50		184	90	.328			184	90	.328
Westmi..ster	137	255	.651	567	12	182		-25	12	157	.929	100		112	157	.584
White Hills	173	191	.529	567	28	216		-50	28	166	.856	100		128	166	.565
Wildwood	195	243	.555	486	100	250		-40	100	210	.677			100	210	.677
Winbourne	240	112	.318	459	381	105	-50		331	105	.241	-100		231	105	.313
Zachary	239	321	.573	567	67	216		-25	67	191	.740	50		117	191	.620
Total	12,891	12,505			12,278	9,392	0	0	12,278	9,392				12,278	9,392	
Middle Schools															
Baker	402	361	.473	864	394	495		-150	394	345	.467				
Broadmoor	366	433	.541	Closed											
Capitol	366	184	.335	918	729	185	-211	- 50	518	135	.206				
Central	441	481	.522	1026	400	550		-200	400	350	.467				
Crestworth	374	210	.359	1026	714	106	-200	- 57	514	49	.087				
Glasgow	252	300	.543	810	366	432		-100	366	332	.476				
Glen Oaks	538	349	.393	1188	1036	278	-300	-150	736	128	.148				
Istrouma*	342	684	.620	1242			342	684	342	684	.667				
Kenilworth	292	332	.530	999	692	366	-200	- 50	492	316	.391				
McKinley*	242	896	.787	1593			442	896	442	896	.670				
Northwestern	339	324	.490	891	168	245	- 50	-100	118	145	.551				
Park Forest	412	355	.460	945	14	471	200	-200	214	271	.559				
Prescott	527	287	.353	1269	870	204	-150	-100	720	104	.126				
Scotlandville	111	143	.560	Closed											
Sherwood*	327	377	.535	945			327	377	327	377	.536				
Southeast	378	480	.560	1026	29	919	100	-500	129	419	.765				
Valley Park	287	286	.499	918	92	469		-250	92	219	.704				
Westdale	274	321	.540	972	724	250	-200	- 50	424	200	.321				
Total	6,270	6,803			6,228	4,970	0	0	6,228	4,970					

(Same as for Outcome 1)

* Assumes, for sake of calculations, all proposed magnets implemented in Fall 1983. Does not include 1983 white enrollment loss estimate shown in Table 1.

Table 13
(continued)

	1983* Post-Transfer Enrollment				1987 Pre-Tranfer Enrollment Adjusted for Enrollment Change, 1982-1987										
							Outcome 1					Outcome 2			
	Black	White	Proportion White	Capacity	Black	White	Transfers Black	Transfers White	Post-Transf. Enrollment Black	Post-Transf. Enrollment White	Proportion White	Add'l M-M Transfers Black	Add'l M-M Transfers White	Black	Proportion White
High Schools															
Baker	770	860	.528	1485	962	403	-400	-100	562	303	.350				
Baton Rouge*	208	981	.825	1566			308	981	308	981	.761				
Belaire	576	965	.626	1620	118	129	- 46	-883	72	416	.852				
Broadmoor*	505	618	.550	1404			505	965	505	965	.656				
Capitol*	622	760	.550	1728			622	760	622	760	.550				
Central	474	771	.619	1458	34	1185	100	-850	134	335	.714	(Same as for Outcome 1)			
Glen Oaks	711	659	.481	1701	1255	530	-436	-200	819	330	.287				
Istrouma	739	449	.378	1728	1271	420	-368	-100	903	320	.262				
McKinley	507	254	.334	1431	1426	195	-500	- 50	926	145	.135				
Northeast	232	317	.577	1215	243	334			243	334	.579				
Robert E. Lee	660	712	.519	1242	759	639	-200	-100	559	539	.491				
Scotlandville*	515	630	.550	1431			515	630	515	630	.550				
Tara	482	889	.648	1512	906	614	-200	-200	706	414	.370				
Woodlawn	139	823	.856	999	73	1042	100	-553	173	489	.739				
Zachary	296	425	.589	1269	326	658		-300	326	356	.523				
Total	7,436	10,113			7,373	7,319	0	0	7,373	7,319					
Special Ed.	389	201			612	272			612	272					
System Total					26,491	21,954			26,491	21,953					

* Assumes, for sake of calculations, all proposed magnets implemented in Fall 1983. Does not include 1983 white enrollment loss estimate shown in Table 1.

Table 14

Predicted Enrollment and Interracial Contact (Sbw)
Under the U.S Plan and the Court's Plan

Year	Enrollment Black	Enrollment White	Total	Wh. Enr. Change	% White	Sbw
U.S. PLAN (OUTCOME 1)						
1982	26,859	29,179	56,036	-.115	52.1	42
1983	26,833	25,823	52,656	-.115	49.0	44[a]
1984	26,778	23,524	50,302	-.089	46.8	42[a]
1985	26,698	21,736	48,434	-.076	44.9	41
1986	26,591	21,736	48,327	0	45.0	---
1987	26,491	21,953	48,444	-.01	45.3	32
U.S. PLAN (OUTCOME 2)						
1982	26,859	29,179	56,038	-.115	52.1	42
1983	26,833	25,823	52,656	-.115	49.0	44[a]
1984	26,778	23,524	50,302	-.089	46.8	42[a]
1985	26,698	21,736	48,434	-.076	44.9	41
1986	26,591	21,736	48,327	0	45.0	---
1987	26,491	21,736	48,227	0	45.1	36
COURT'S PLAN						
1982	26,859	29,179	56,038	-.115	52.1	42
1983	26,832	26,203	53,035	-.102	49.4	41
1984	26,778	23,871	50,649	-.089	47.1	40
1985	26,698	22,057	48,755	-.076	45.2	39
1986	25,591	20,667	47,258	-.063	43.7	38
1987	26,491	19,613	46,104	-.051	42.5	37

a For sake of simplicity, assumes all magnets implemented in Fall 1983
b For sake of simplicity, assumes court's plan phase-out effect not felt until 1986.
--- Figures for 1986 not calculated. Can be interpolated from 1985 and 1987 figures.

Appendix A

Elementary School Attendance Zones

Upon implementation of the appropriate magnet program, the neighborhood attendance zone for each magnet school shall cease to exist and attendance shall be on a Parish-wide basis. Reassignment of students residing in the current attendance zones of these schools who do not attend the magnet programs therein is set forth above in the sections of this plan detailing magnet school implementation.

All schools shall have attendance zones incorporating the population zones listed below. These include the former attendance zones of magnet schools.

1. Audubon
   - 113
   - 114
   - 116
   - 117
   - 118
   - 124
   - 128
   - 136
   - 138 (northern 1/2)
   - 313

2. Bakerfield
   - 027
   - 032
   - 033
   - 034
   - 039
   - 347

3. Baker Heights
   - 035
   - 036
   - 037
   - 038
   - 040
   - 041

4. Banks
   - 088
   - 325
   - 337

5. Beechwood
042
043
052
061
062
065
066

6. Belfair
205
207
208

7. Bellingrath Hills
003
004
005
006
007
320
321

8. Bernard Terrace
216 (southeast 1/4)
227
235
236
237
245
246

9. Broadmoor
110
111
112
115
164
165
166
253
309

10. Brookstown
160
174
177
178
179
180

181
182
183

11. Brownfields
044
045
046
047

12. Buchanan
269
270
271
272
277
278

13. Claiborne
084
147
151
156
162 (northern 1/2)

14. Dalton
197
198
199
200

15. Delmont
162 (southern 1/2)
172
190 (western 1/2)

16. Dufrocq
216 (southwest 1/4)
223
224
225
226
238
310
311
312

17. Eden Park
213 (northern 1/2)
214

215
216 (northern 1/2)
220

18. Forest Heights
011
072
074
075
076
077
078
079
080
085
092 (northwest 1/2)
319

19. Glen Oaks Park
012
073
149
150
153

20. Goodwood
228
229
230
231
232
233
234
241
254
338

21. Greenbriar
008 (northeast 1/2)
009
092 (southwest 1/2)
097
100
318
334
349

22. Greenville
202

206
209
210
211
212
213 (southern 1/2)

23. Harding
053
054
068
069
070
071
089

24. Highland
054
274
275
276
281
283
300
301
302
303
304

25. Howell Park
184
186
191
192
193
194

26. Jefferson Terrace
138 (southwest 1/2)
139
141
143
169
315

27. Lanier
010
152

28. Magnolia Woods

288
292
293
294
296
297
298
299
327
328

29. Mayfair
144
170
287
289
290
316
329
330

30. Melrose
201
203

31. Merrydale
081
083
086
087
094
095
148
154
155
336

32. Nicholson
217
218
219
221
222 (northern 1/2)

33. Northeast
001

34. North Highlands
157
158

159
161
173
175
176
331
332

35. Northwestern
013
015
017
018
028

36. Park Forest
101
102
103
104
105
106
308

37. Park Ridge
002
030
031

38. Parkview
137
140
142

39. Polk
222 (southern 1/2)
239
240
252
265

40. Progress
055
056
057
058
059
067

41. Red Oaks

098
09?
10ε
335

42. Riveroaks
121
122
123
339

43. Ryan
051
060
063
064

44. Sharon Hills
008 (northwest 1/2)
048
049
050
082

45. Shenandoah
096
129
130
131
132
133
134
314

46. Twin Oaks
119
120
306

47. University Terrace
266
267
268
273

48. Villa Del Rey
107
109
333

50. Walnut Hills
248
249
250
251
259
261
262
263
264
279
280
284
344
345

50. Wedgewood
125
126
135
305

51. Westdale
242
243
244
247
256
257
258
260
282
285
286
350

52. Westminster
127
167
168
255
343

53. White Hills
026
029
342
346
348

54. Wildwood
145
291
295
317
326
341

55. Winbourne
187
188
189
190 (eastern 1/2)
195
196

56. Zachary
014
016
019
020
021
022
023
024
340

Appendix B

Middle School Attendance Zones

The middle school attendance zones shown below are based on the elementary school attendance zones shown in Appendix A.

1. Baker

   Baker Heights
   Bakerfield
   Beechwood
     42
     43
     52
   Park Ridge
   White Hills

2. Capitol

   Belfair
   Greenville
   Howell Park
   Melrose
   Red Oaks
     108
   Villa Del Rey

3. Central

   Bellingrath Hills
   Greenbriar
   Glen Oaks Park
   Forest Heights

4. Crestworth

   Brownfields
   Progress
   Ryan
   Sharon Hills

5. Glasgow

   Jefferson Terrace

Mayfair
Walnut Hills
Westdale
256
257
260
282
285
286

6. Glen Oaks

Banks
Claiborne
Harding
Lanier
Merrydale

7. Kenilworth

Buchanan
Highland
Polk
252
265
Magnolia Woods
University Terrace
Wildwood

8. Northwestern

Northwestern
Zachary

9. Park Forest

Park Forest
Red Oaks
98
99
335
Twin Oaks

10. Prescott

Brookstown
Dalton
Delmont
Nicholson
North Highlands
Wimbourne

11. Southeast

Parkview
River Oaks
Shenandoah
Wedgewood

12. Valley Park

Audubon
117
118
124
128
136
138
313
Broadmoor
115
164
166
253
309
Goodwood
241
254
Westdale
242
243
244
246
247
258
350
351
Westminster

13. Westdale

Audubon

113
114
116
117
Bernard Terrace
Broadmoor
110
111
112
165
Dufrocq
Eden Park
Goodwood
230
231
232
233
338
Polk

Appendix C

High School Attendance Zones

The high school attendance zones shown below are based on the elementary school attendance zones shown in Appendix A.

1. Baker

Baker Heights
Bakerfield
  27 (southern 1/2)
  32
  33
  34
  39
Beechwood
Park Ridge
Progress

2. Belaire

Audubon
Howell Park
  191
  192
Melrose
Park Forest
Red Oaks
Villa Del Rey

3. Central

Bellingrath Hills
Greenbriar
River Oaks
Twin Oaks

4. Glen Oaks

Brownfields
Forest Heights
Glen Oaks Park
Harding
Merrydale
Ryan
Sharon Hills

5. Istrouma

Banks
Brookstown
Claiborne
Dalton
Delmont
Howell Park
  184
  186
  193
  194
Lanier
North Highlands
Winbourne

6. McKinley

Buchanan
Eden Park
Highland
Nicholson
Polk
University Terrace
Walnut Hills (excluding 248 and 249)

7. Northeast

Northeast

8. Robert E. Lee

Dufrocq
Magnolia Woods
Mayfair
Walnut Hills
  248
  249
Westdale
Wildwood

9. Tara

Broadmoor

Belfair
Bernard Terrace
Greenville
Goodwood
Westminster

10. Woodlawn

Jefferson Terrace
Parkview
Shenandoah
Wedgewood

11. Zachary

Bakerfield
027 (northern 1/2)
347
Northwestern
White Hills
Zachary

APPENDIX D

MAP KEY

POPULATION ZONE MAP

ELEMENTARY SCHOOL ZONE MAP

MIDDLE SCHOOL ZONE MAP

HIGH SCHOOL ZONE MAP

East Baton Rouge
School Map Key, 1982

Elementary

Audubon	E2
Bakerfield	E6
Baker Heights	E3
Banks	E7
Beechwood	E9
Belfair	E11
Bellingrath Hills	E12
Bernard Terrace	E13
Broadmoor	E14
Brookstown	E17
Brownfields	E18
Buchanan	E19
Cedarcrest/Southmoor	E23
Claiborne	E27
Crestworth	E29
Dalton	E31
Delmont	E32
Dufrocq	E33
Eden Park	E34
Forest Heights	E36
Glen Oaks Park	E40
Goodwood	E41
Greenbriar	E42
Greenville	E43
Harding	E44
Highland	E45
Howell Park	E47
Jefferson Terrace	E50
La Belle Aire	E52
Lanier	E53
LaSalle	E54
Magnolia Woods	E56
Mayfair	E57
Melrose	E60
Merrydale	E61
Nicholson	E63
Northdale	E64
Northeast	E3-N
North Highlands	E65
Northwestern	E2-N
Park	E67
Park Forest	E68
Park Ridge	E70
Parkview	E71
Polk	E72
Progress	E76

East Baton Rouge
School Map Key, 1982
(cont'd)

Red Oaks	E78
Riveroaks	E79
Ryan	E81
Sharon Hills	E96
Shenandoah	E97
South Boulevard	E100
Tanglewood	E103
Twin Oaks	E118
University Terrace	E106
Villa del Rey	E107
Walnut Hills	E108
Wedgewood	E109
Westdale	E110
Westminster	E111
White Hills	E112
Wildwood	E113
Winbourne	E114
Zachary	E1-N

Middle Schools

Baker	M5
Broadmoor	M16
Capitol	M21
Central	M25
Crestworth	M30
Glasgow	M37
Glen Oaks	M39
Istrouma	M49
Kenilworth	M51
McKinley	M59
Northwestern	M1-N
Park Forest	M69
Prescott	M75
Scotlandville	M94
Sherwood	M98
Southeast	M101
Valley Park	M116
Westdale	M117

High Schools

Baker	H4
Baton Rouge	H8
Belaire	H10
Broadmoor	H15
Capitol	H20
Glen Oaks	H38
Central	H24

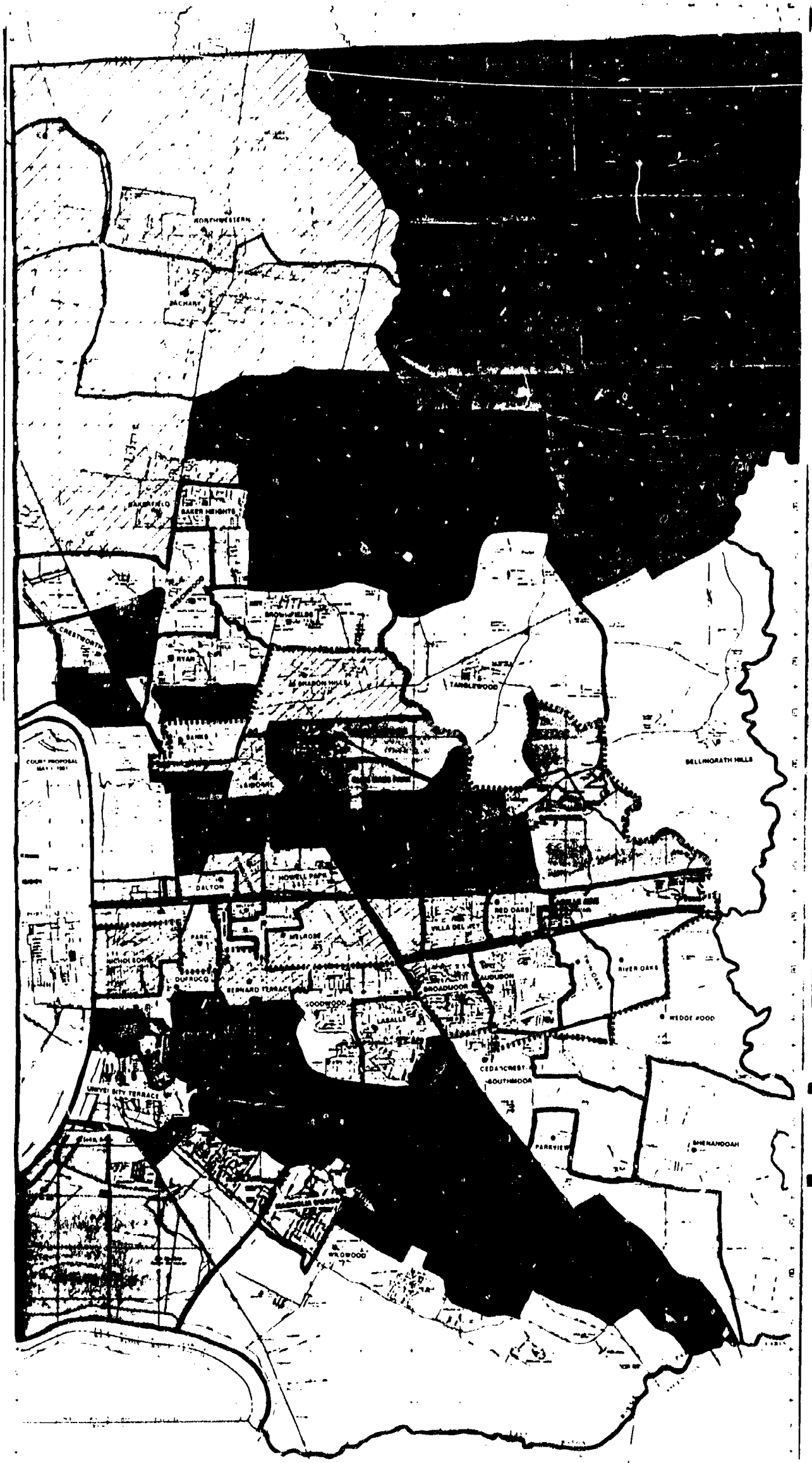
East Baton Rouge
School Map Key, 1982
(cont'd)

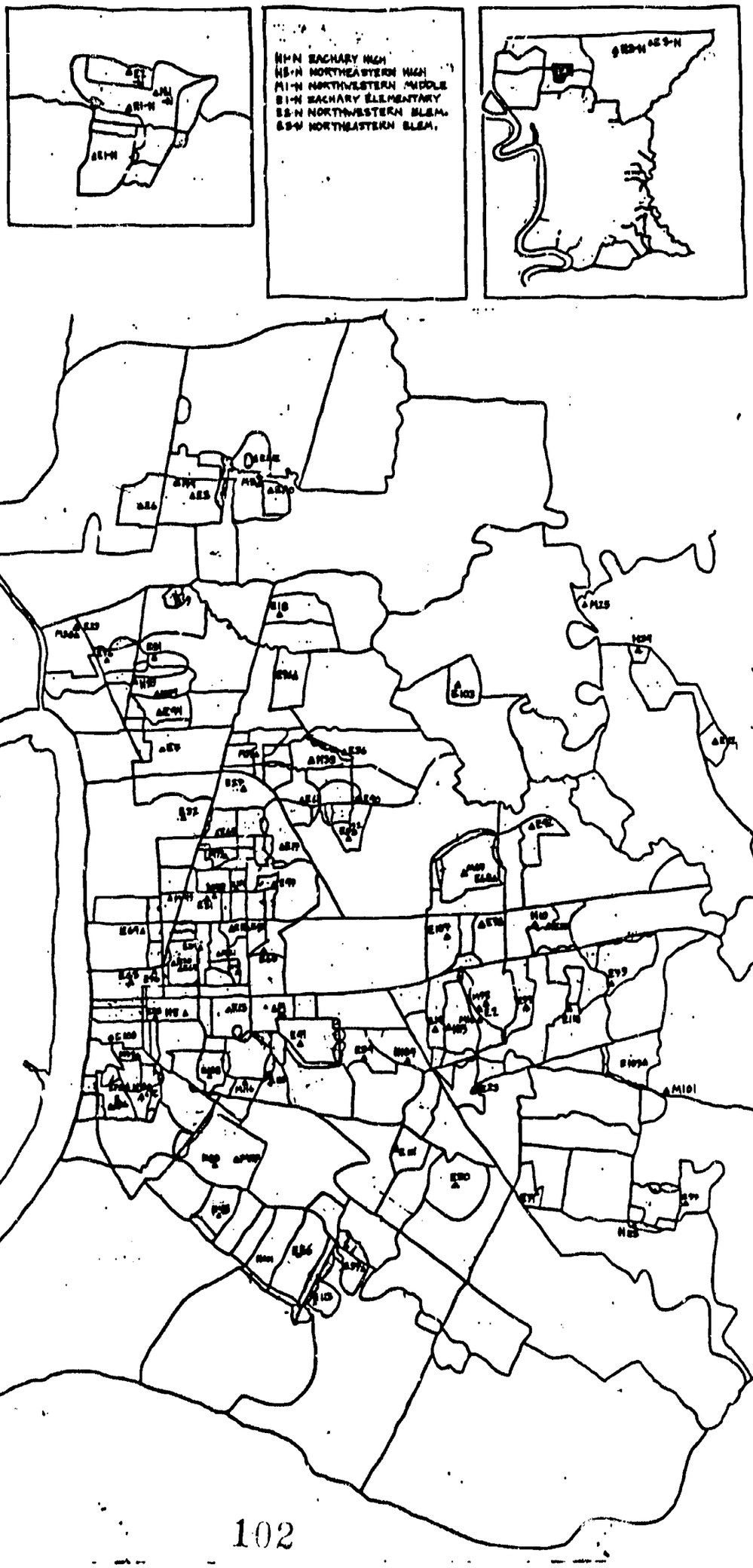
Istrouma	H48
McKinley	H58
Northeast	H2-N
Robert E. Lee	H80
Scotlandville	H93
Tara	H104
Woodlawn	H115
Zachary	H1-N

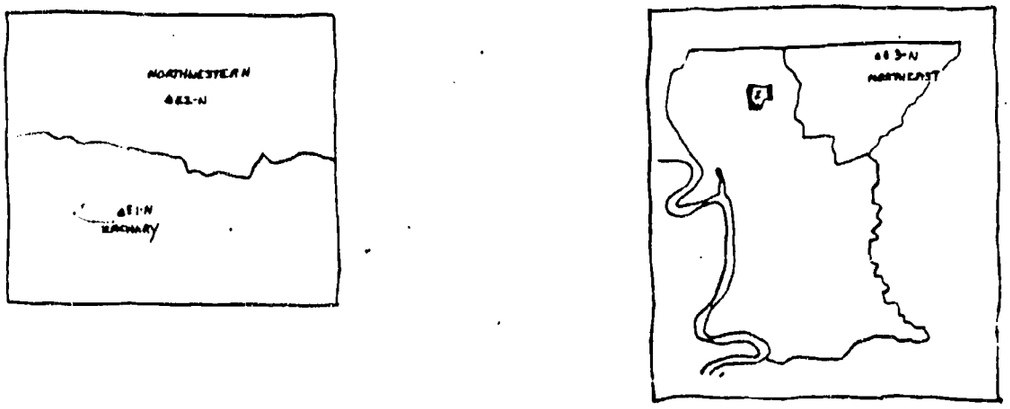
Schools Closed by Court Order

A - Alsen
B - Capitol
C - Fairfields
D - Hollywood
E - North Scotlandville
F - Perkins
G - Port Hudson
H - Reddy
J - Scott Center
K - Sherwood Forest
L - South Greenville
M - Southdowns
N - Wyandotte
O - Zion City

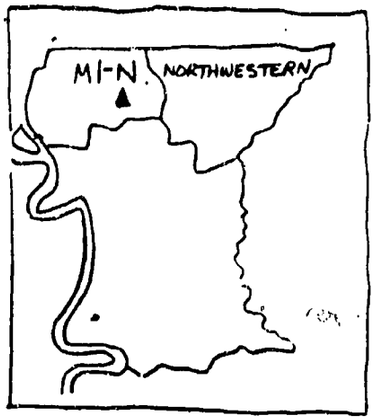
District Court Elementary Plan - May 1, 1981



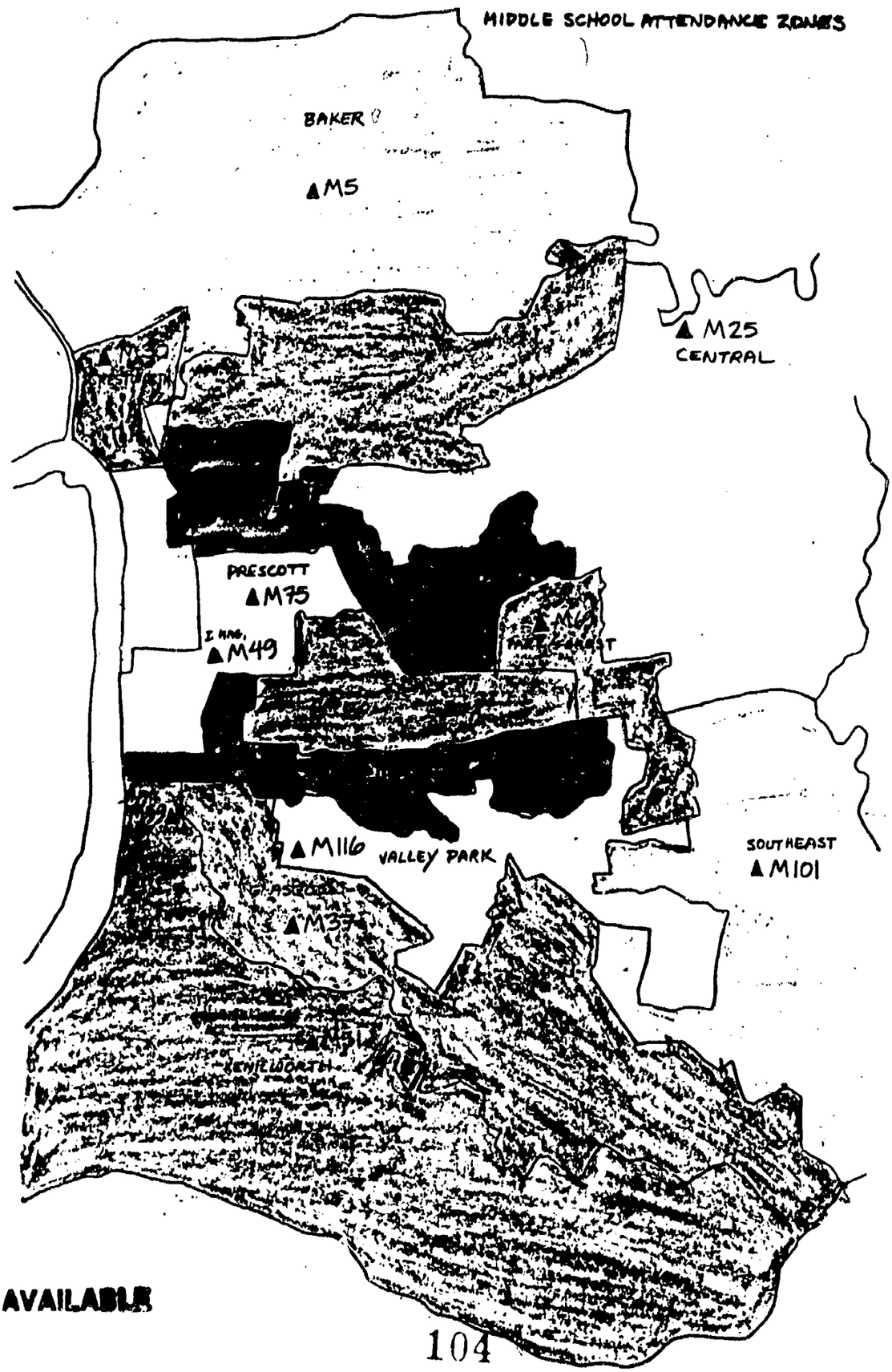


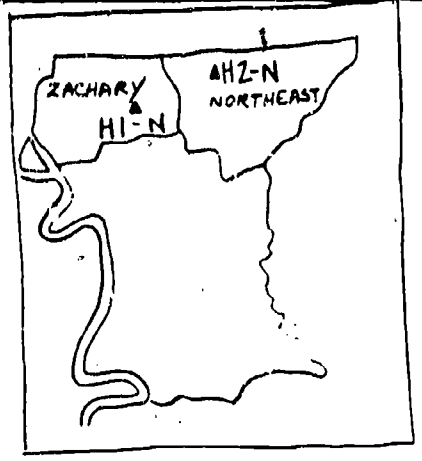


ELEMENTARY SCHOOL ATTENDANCE ZONES

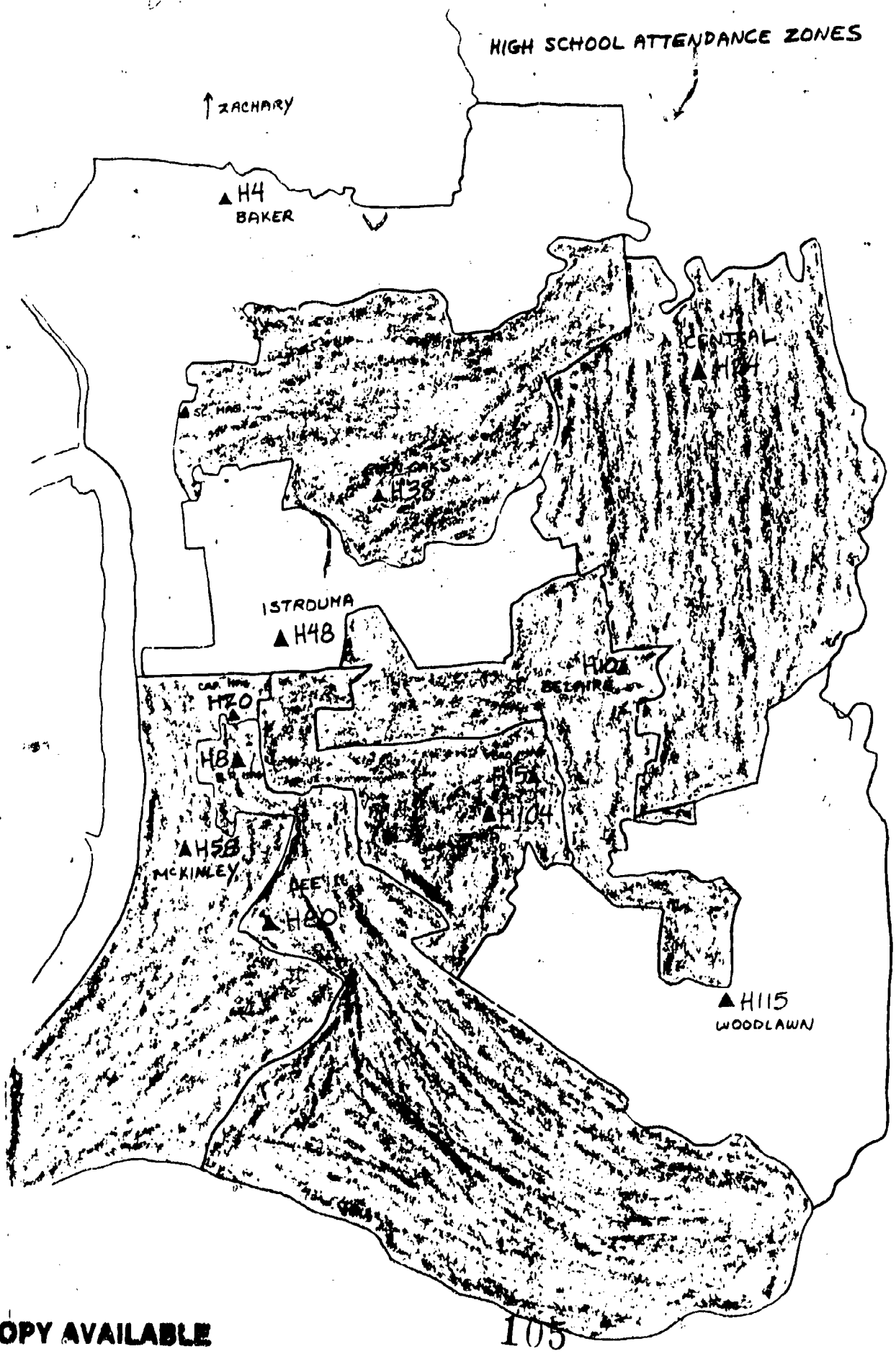


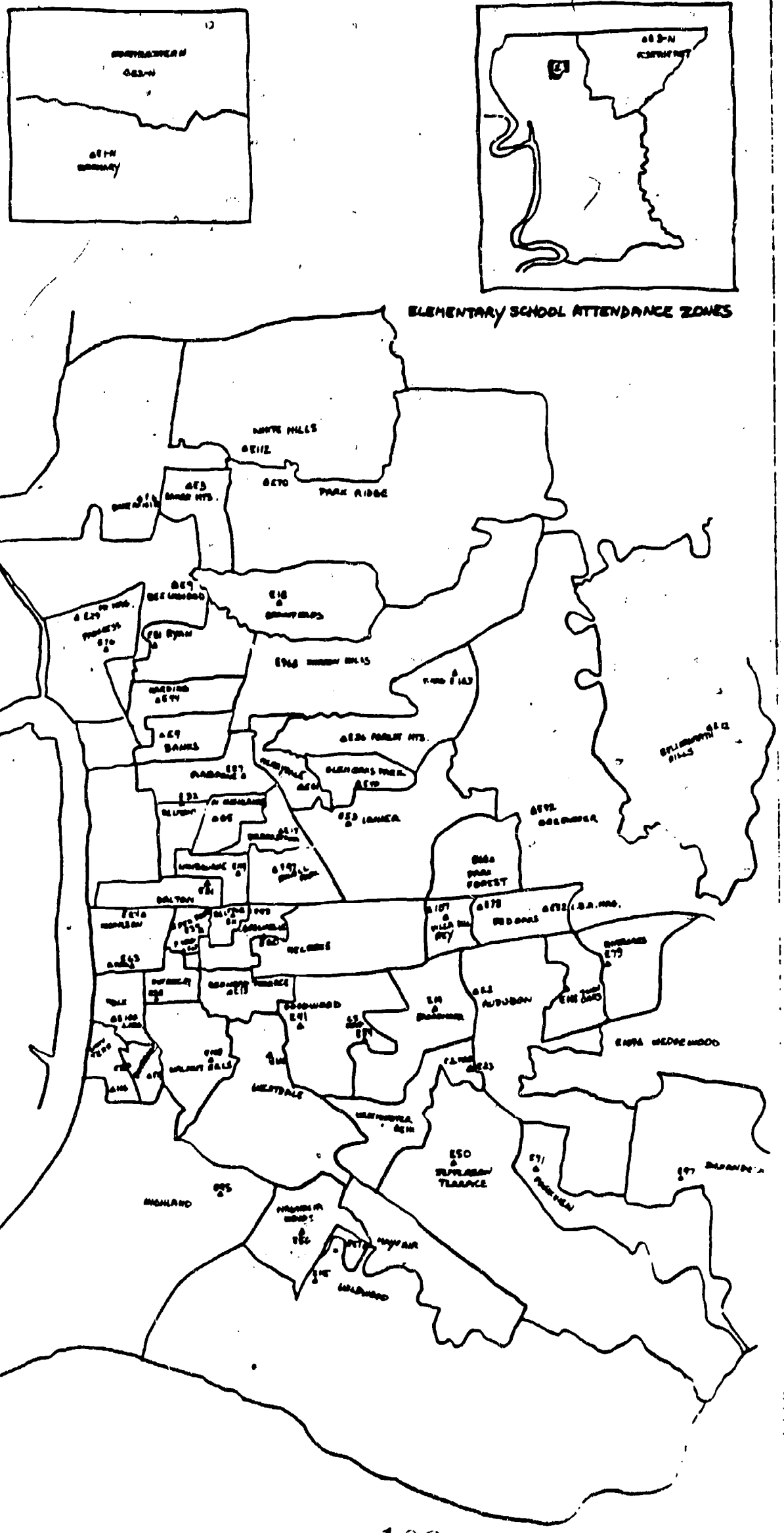
MIDDLE SCHOOL ATTENDANCE ZONES

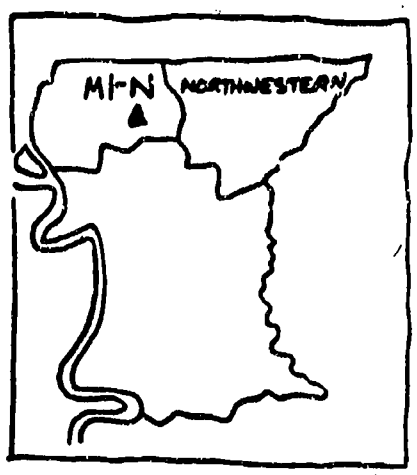




HIGH SCHOOL ATTENDANCE ZONES







MIDDLE SCHOOL ATTENDANCE ZONES

BAKER

M5

M30
CRESTWORTH

M25
CENTRAL

M39
GLEN OAKS

PRESCOTT
M75

2 NAG.
M49

M69
PARK FOREST

M121 CAPITOL

SW. NAG.
M98

WESTDALE
M117

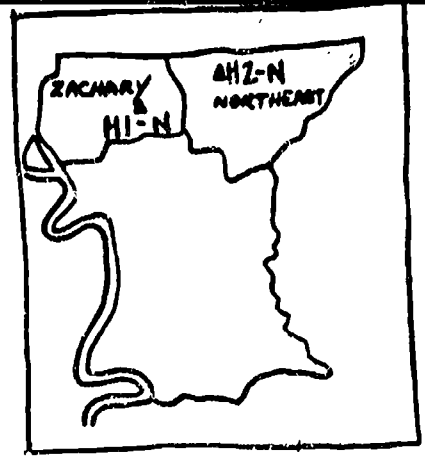
M59
NOK. NAG.

M116 VALLEY PARK

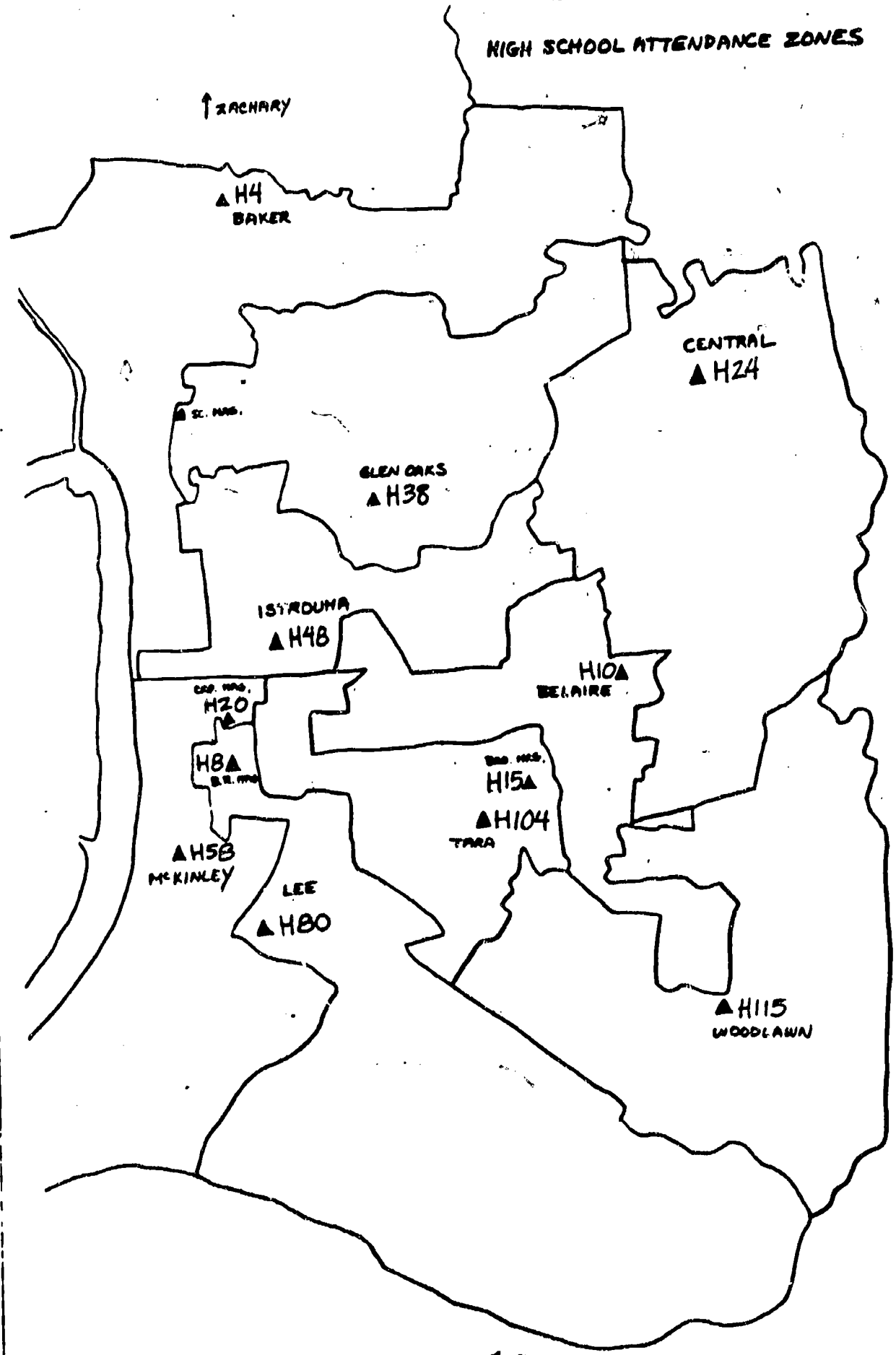
GLASGOW
M37

SOUTHEAST
M101

M51
KENILWORTH



HIGH SCHOOL ATTENDANCE ZONES



APPENDIX E

TEAM LEARNING

NEWSLETTER AND TEACHER'S MANUAL

NEWSLETTER

STUDENT TEAM LEARNING

Vol. 3, No. 1 March, 1982

When students learn in small, carefully structured learning teams and are rewarded for working toward a common goal, they help one another learn, gain in self-esteem and feelings of individual responsibility for their learning, and increase in respect and liking for their classmates.

Student Team Learning: RICHLAND SCHOOL DISTRICT ONE Columbia, South Carolina

Virginia Studstill
Coordinating Teacher

Brain Cells and Asteroids -- topics in a science class? Division Bulldogs and Burnside Cobras -- new breeds of animals? Not in Richland School District One, in Columbia, South Carolina. These are the team names of students who have earned first place in their classrooms by learning the "cooperative way."

More than 2,000 students in approximately 200 classes throughout our district are teaming up to learn in classes ranging from math and language arts to business education and art in grade levels 2 through 12. Teachers, principals, parents, and most of all, the students themselves are excited about the positive effects of Student Team Learning on learning, motivation, and intergroup relations. How did it all begin?

In August, 1980, the program was implemented full-scale in 10 target schools chosen in "feeder patterns" so students could continue to experience team learning as they were promoted to higher grade levels. The program was funded through an ESAA grant aimed at improving integration in these 10 racially balanced target schools.

The Student Team Learning staff included 10 facilitating teachers and aides, assigned in pairs to each of the target schools. The facilitator's role was to recruit teachers on a voluntary basis, train them in the team learning strategy of their choice, and support their use of the program. The aide's

(continued on next page)

International Conference Coming in July

Cooperative learning is an international concern among educators. The International Association for the Study of Cooperation in Education will hold its second international conference this summer, July 6-9, at Brigham Young University in Utah.

The first conference was held in 1979 and brought together educators from nine countries and provided impetus for the formation of the Association. It also resulted in a major volume on research and practice, Cooperation in Education, edited by Sharan, Webb, and Hertz-Lazarowitz (Brigham Young University Press, 1980).

The second international conference will feature four days of invited speakers, workshops, research presentations, and media presentations related to cooperation in education.

If you're interested in studying, doing, or researching cooperation in educational settings, the conference may be what you're looking for. For further information, contact Dr. Clark Webb, 120 MCRB, Brigham Young University, Provo UT 84602.

Columbia, SC (continued)

role was clerical, to provide the necessary support materials. Neither staff person had classroom duties, but served as "staff development" personnel working directly with teachers to improve instruction.

The 20 staff members and their principals were trained by Ruth Carter in 1980. Awareness sessions were conducted in the schools during the opening days of the school year. With the first recruits signed up, training began in September. By January, 1981, 75 teachers and 2,500 students were involved. TGT was the most popular strategy; several teachers found that STAD and Jigsaw best suited their instructional programs.

As the year progressed, teachers expanded their use of the program to additional classes and/or strategies, and in each school a solid core of committed teachers emerged. Assisted by facilitators and aides, teachers developed worksheets in many subject areas, and a district-wide system of sharing materials began. Many ideas developed for the recognition of team winners -- from "No. 1" badges worn by third graders to high school newsletters that named the winning teams from all the Student Team Learning classes in the school. Students became adept at doing their own scoring, some even becoming official "STL Student Assistants."

A district-wide videotape was produced in March, 1981. A district-wide newsletter was published quarterly to acquaint district personnel with the project, generate interest among other principals and teachers, and give the 100 Student Team Learning teachers a feel for how the program was developing in schools outside their own. Both efforts served their intended purpose of "spreading the good news about Student Team Learning."

Overall, the first year of the project was successful. Teachers witnessed an increase in student achievement and motivation, as well as positive effects on human relations. Students indicated they learned more and found it to be interesting and enjoyable to work cooperatively with their classmates. The 1980-81 ESAA evaluation, comparing students in (experimental) STL classes to a control group, found significant improvement in the experimental group in the area of choosing learning group companions of other races.

The 1981-82 school year brought some changes in the design of the program. Budget cuts caused reduction of the school-based facilitators and aides from 10 to 7. Each pair was assigned to two schools, bringing four more target schools into the project.

Dr. J. Richard Lewis helped get our second year off to a good start with a training session in August, 1981 for facilitators and principals of the 14 schools. As of February, 1982, program participation has increased to approximately 135 teachers. Emphasis has been placed on coordinating Student Team Learning techniques and instructional materials with the statewide basic skills objectives. Teachers are finding the team learning processes to be a worthwhile tool in meeting these instructional goals.

Training sessions are now offered at our district's Teacher Center on a regular basis for teachers in non-ESAA schools. Other principals in the district have indicated an interest in having their teachers adopt the program.

What has made the program a success? Several factors are involved. First and foremost is the sound methodology of the Student Team Learning techniques. They enable teachers to foster cooperation while teaching the basics. Second has

Videotape Available

A 30-minute videotape produced by Richland School District One outlines the Student Team Learning program's use in the district, shows the classrooms in action, and contains interviews with students and teachers.

Copies are available to interested school districts on request. Send a blank tape to Mrs. Betty Foran, Director of Media Services, Richland School District One, Waverly Annex, 1225 Oak Street, Columbia SC 29204. Indicate that you would like a copy of the STL videotape.

been the continuous support of our district administrators and principals combined with an enthusiastic, well-trained and creative STL staff. Third is the group of classroom teachers who have been willing to adopt a new instructional approach and who value the importance of human relations as well as academics.

The team approach to learning is firmly rooted in our district. We have come a long way from the first time we viewed the Johns Hopkins filmstrip in August, 1980, and we are very proud of the program as it exists today.

With experienced trainers, supportive administrators, and dedicated teachers, we look forward to the continued growth of "teaming up to learn" in Richland School District One.

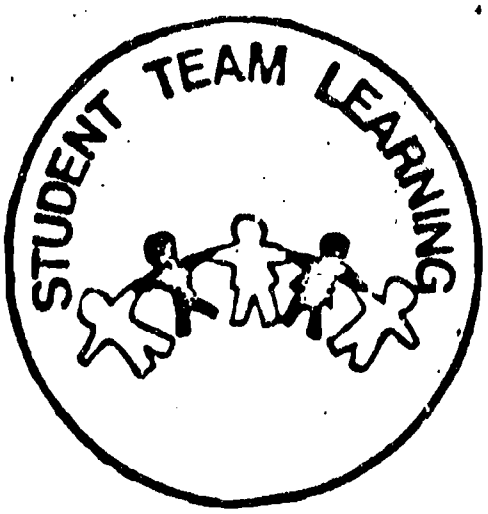
Materials Update

Metric Education materials for use with Student Team Learning are now packaged and available. They were developed under a one-year grant from the Metric Education program of the Department of Education and include worksheets/games/quizzes that cover three weeks of instruction in learning basic metric concepts and application. The materials are fifth/sixth grade level.

Also, a sample set of U. S. History materials is being prepared that contains many Jigsaw units as well as TGT and STAD skill-building units. The Jigsaw units cover such topics as discovery and exploration of the new world, the revolutionary war, urbanization, and so on. The skill-building units cover map reading, timelines, and graphs.

In addition, all current Student Team Learning units are being retyped in larger, bolder type for clearer reproduction. At the same time, revisions are being incorporated based on feedback from users.

This is a good place to insert a reminder. Student Team Learning is a set of instructional processes -- not a box of worksheets and game/quizzes. Our curriculum materials are most effectively used to help you begin implementation of the processes and serve as examples from which you can prepare your own worksheets and game/quizzes that match your own teaching objectives.



Newsletters and correspondence that pertain to Student Team Learning in Richland School District One are immediately identifiable by their distinctive logo, created by the project personnel.

Hopkins Training Set for May 6,7

A two-day training and information workshop will be conducted on May 6 and 7, 1982, at the Hopkins University Center in Baltimore by the Student Team Learning project staff.

The purpose of this workshop is to certify new trainers and to refresh the skills of current trainers and users. Certified trainers provide awareness presentations, teacher training, and technical assistance to schools and districts nationwide.

Full certification as a trainer is based on participation in the complete training workshop, knowledge and understanding of the Student Team Learning instructional processes, classroom experience with the processes, successful conduction of awareness and training sessions, and individual interest and capability.

No fee will be charged for attendance at the workshop, but participants must pay their own travel and lodging. For further information and registration forms, call Ruth Carter (301/338-7569) or write to the project. Registration will be limited to 50 participants.

esearch Update

he results are in on a large-scale study f 1,487 ninth-grade general math students n inner-city Philadelphia, PA. The study overed a full year and compared the instructional effects of Student Team Learning (the STAD process), Mastery Learning, irect Instruction, and a combination of eam and Mastery Learning instruction.

obert Slavin and Nancy Karweit directed he study, which featured minimum researchr involvement. Teachers were trained by school district staff development team nd were fully responsible for program mplementation.

he Student Team Learning method (STAD) roduced significantly increased math achievement, as measured by a shorterned ersion of the CTBS, compared to the other nstructional processes ($F=9.56$, $p < .01$). lso, Student Team Learning significantly ncreased the achievement of lower-ability tudents ($F = 4.35$, $p < .05$) compared to he control group. Other results aren't ll that clear-cut, however. None of the ther instructional processes outperformed he control group -- in fact, the Mastery earning and Direct Instruction processes howed a significant decrease in achievement compared to the control group.

he research report points out that, despite the randomization involved in the tudy, the control group had significantly ower pretest scores on all tests, which ade it non-equivalent to all the other roups. The full report is available from he Student Team Learning project.

Student Team Learning: NASHVILLE, TENNESSEE

ooperation is the key element of the Student Team Learning program, and it seems fitting that cooperation among various agencies is the key element in the use of he program in the Metro-Nashville School System.

n Nashville, five agencies pulled together to form a Training Institute to help teachers deal with issues of desegregation segregation.

* First, the University of Tennessee Bureau of Educational Research and Service (the BERS) in Knoxville, directed by Charles Peccolo, was chosen to coordinate the Institute.

* The Mid-Atlantic Appalachian Race Desegregation Assistance Center (MAARDAC), headed by Fred Venditti, provided a director to coordinate the Institute activities, a responsibility assumed by Charlene Michael.

* The Tennessee Statewide Facilitator Project (TSFP), with director Charles Achilles and state facilitator Martin McConnell, matched the needs assessment to specific National Diffusion Network "Programs that Work" and invited selected projects (including Student Team Learning) to participate.

* The Teacher Center in Nashville, directed by Randy Randalls, was selected to house the Training Institute.

* The Metro-Nashville school district identified teams of two teachers and an administrator from each of 100 target schools to participate in the Institute.

The planning and coordination that has led to the use of Student Team Learning in Nashville reminds us once again that cooperation is the major way that adults get things done in today's world -- and cooperation in the classroom makes good sense as preparation for working in the adult world.

This newsletter is prepared and distributed through funds from the National Institute of Education and the National Diffusion Network Division of the Department of Education. The opinions expressed do not reflect the policy of the Institute or Division, and official endorsement by these agencies should be inferred.

Direct all correspondence to Editor, Student Team Learning Newsletter, Johns Hopkins Team Learning Project, Center for Social Org. of Schools, 3505 N. Charles St., Balt. MD 21218

Spotlight on Certified Trainers
PHIL LUCASSE

Certified trainers are vital to providing Student Team Learning training to teachers across the country. To give them some recognition for their efforts, we intend to occasionally highlight the work of various trainers in this newsletter.

We begin, appropriately, with Dr. Philip Lucasse, professor of education at Calvin College in Grand Rapids, Michigan.

"I was first captivated by the team-game structure back in 1970," Phil says. "I used it at teacher in-service days as a member of the Education Department faculty at Calvin College.

"In 1975, I participated in the design and served as field coordinator for a study in Michigan. We used language arts with about 1000 junior-high students to compare the effectiveness of traditional teaching, individualized instruction, and the Student Team Learning TGT process. This study was a major factor in gaining acceptance in the National Diffusion Network."

Phil also helped to develop the first TGT training manual, and participated in the first trainer certification seminar held in 1978 in Washington, D.C.

"I serve as a trainer for about ten in-service teacher workshops per year," Phil notes. "Although I've worked mainly in the mid-West -- Michigan, Indiana, Minnesota, and Illinois -- I've also trained in North Carolina, Canada, Texas, and New Mexico. This spring, I have commitments for training in Denver, Colorado and in Cassopolis and Grand Rapids, Michigan.

"I really enjoy the training sessions -- primarily because I've never had a bad one. The combination of a hands-on experience in the training session with the obvious value of the strategies never fails to generate a very positive spirit in the participants. And each session seems to provide some new learning and refinements for me as well.

"To me, the most unusual set of instructional worksheets and game/quizzes was made by a vocational education teacher. His problem getting his students to use the precise labels for the tools, parts, and fasteners that they used to repair cars. He pictured and defined them on his worksheets and game/quizzes -- from diaphragm pressure spring, to #8 sheet metal screws, to Easy-Out bolt removers -- and used the Student Team Learning processes to get the students to learn the names of the things. The results were fewer 'hand me the gizmo' requests in his shop classes.

"We all know the motivating power of Student Team Learning. My most striking confirmation of this was reported by a teacher at a follow-up session. That very morning, one of her students had insisted that his dad bring him to school to participate in class. Immediately after the class, he went back home to elevate the plaster-encased leg that he had broken playing football the evening before. He couldn't miss that class, he said, because 'his team needed him!'"

Phil not only serves as a certified trainer -- he also teaches his students at Calvin College the Student Team Learning methods as part of their coursework.

"I'm team-teaching a course called 'Effective Use of Small-Group Strategies in Regular Classrooms.' We're using the Johnson and Johnson text, Learning Together and Alone -- really a super book with a nice section on Student Team Learning. In addition to the classroom work, our students spend some time in an elementary classroom during the first part of the semester to get acquainted with the teacher and class, to identify some material that will be taught, and then to design some lessons that use small group strategies. My partner and I model the small group strategies in our teaching and, interestingly enough, all but one of the students have chosen to use the TGT or Jigsaw Student Team Learning methods for their own teaching in the classroom."

Preventing Delinquency

Family, school, peers, and community all influence the behavior of children, and organizational changes in these domains can change children's behavior in order to prevent delinquency.

That's a simplistic summary of the rationale behind a large R & D project to prevent delinquency being conducted by the Center for Law and Justice in Seattle, Washington

in conjunction with the Westinghouse National Issues Center in Columbia, Maryland. The Seattle Public Schools are serving as the site of a comprehensive study, and research is also being conducted on seven school-based delinquency projects around the country. These projects are located in Bangor, Maine; Reading, Pennsylvania; West Palm Beach, Florida; Paterson, New Jersey; Eugene, Oregon; Waterbury, Connecticut; and New York, New York.

At each site, one of the many strategies being evaluated is the use of Cooperative Learning and Mastery Learning as instructional practices that may increase the proportion of students who succeed academically, increase student commitment to educational goals, increase student attachment to teachers and non-delinquent peers, and increase student beliefs in the fairness of school.

The project is funded by the Office of Juvenile Justice and Delinquency Prevention.

ABOUT STL...

"...team learning systems, in effect, require the participating students to practice virtue -- and not just talk about it."

Thus states Edward Wynne, associate professor of education at the College of Education, University of Illinois in an article in American Eduction (Summer, 1981). Wynne argues that team learning can promote ethical behavior and virtue in students because team learning encourages students to practice ethical behavior as they work in their teams.

Wynne's article offers a different slant on the possible effects of team learning in classrooms. The article appears in the "Question of Ethics" column and is titled: "Team Learning: Bringing Virtue to the Classroom."

Noteworthy, published by the Mid-Continent Regional Educational Laboratory (McREL), includes a write-up on Student Team Learning as part of its What's Noteworthy on School Improvement issue (Summer, 1981).

McREL's purpose as an educational laboratory is to help improve educational practice in a seven-state area (Colorado, Kansas, Missouri, Nebraska, North and South Dakota, and Wyoming) by providing school districts with information and technical assistance for improving practice.

USER'S SURVEY

Have you filled out your STL questionnaire and returned it yet? We mailed about 2,500 in late 1981, and just recently sent a follow-up. It's amber-gold, takes about five minutes to complete, and gives you the chance to describe how you're using STL and what you think of it.

About 500 questionnaires have been returned so far. We hope to hear from many others. Please fill yours out and send it in. We will provide a summary of the responses and comments in the next issue.

Center for Social Organization of Schools
The Johns Hopkins University
3505 N. Charles St.
Baltimore, Md. 21218

DR. CHRISTINE ROSSELL
DEPARTMENT OF POLITICAL SCIENCE
BOSTON UNIVERSITY
232 BAY STATE ROAD
BOSTON, MA 02215

From the Johns Hopkins Team Learning Project

Student Team Learning

Student team learning is a new instructional approach based on years of research on student learning in cooperative teams conducted at the Center for Social Organization of Schools at The Johns Hopkins University.

Why should you use Student Team Learning in your classroom?

- ✓ Student Team Learning increases learning of basic skills in many subject areas and at many grade levels by making drill and practice interesting and by making students want each other to do their best.
- ✓ Student Team Learning develops positive interstudent relations in desegregated classrooms or other heterogeneous groups by having students share a common goal and help one another learn.
- ✓ Student Team Learning improves students' self-esteem and feelings of competence by encouraging students to value one another and see one another as important resources.
- ✓ Student Team Learning techniques are practical. They are
  - inexpensive
  - easy to use
  - extensively pilot tested and evaluated
  - clearly focused on basic skills learning
  - carefully structured to enhance learning and affective goals at the same time

Student Team Learning is a set of instructional techniques developed at the Center for Social Organization of Schools at The Johns Hopkins University, and evaluated in schools all over the United States. The basic idea behind the Student Team Learning techniques is that when students learn in small, carefully structured learning teams and are rewarded for working toward a common goal, they help one another learn, gain in self-esteem and feelings of individual responsibility for their learning, and increase in respect and liking for their classmates, including their classmates of other races.

The Team

Do you remember being on a baseball or softball team, up at bat, with your teammates behind you shouting, "Hit it a mile!" You knew you would do your best because your peers, the people who meant the most to you besides your family, depended on you. The thrill of coming through for the team, of being the "star" even for a day, is one that few people forget. Being on a team, working for a cooperative goal, is for many people one of the most exciting experiences in life.

A Student Team Learning classroom is a classroom in which teams are brought into the learning process to provide the same kind of peer support, excitement, and camaraderie that are so characteristic of sports teams. The Johns Hopkins Team Learning Project was set up to design practical classroom techniques that draw on the powerful motivating qualities of the team – qualities that are among the most widely known in social psychology.

After eight years of research in all kinds of schools, we have developed two team techniques, Teams-Games-Tournament (TGT) and Student Teams-Achievement Divisions (STAD), and adapted a third, Jigsaw, originally developed elsewhere. These three all meet the following criteria:

- ✓ They have positive effects on achievement;
- ✓ They have positive effects on race relations in desegregated schools;
- ✓ They have positive effects on students' mutual concern and self-esteem;
- ✓ They are easy and inexpensive for teachers to use.

Teams-Games-Tournament (TGT)

In TGT, students are assigned to learning teams of four or five members. After the teacher presents a lesson, he or she hands out worksheets to each team. The team members study together, trying to make sure that every team member knows the material, because the team cannot win if some students are not prepared. At the end of the week, students from each team compete with one another on simple learning games to add points to their team scores. This competition gets the whole class excited about learning, even when the material ordinarily requires drill and memorization.

Student Teams-Achievement Divisions (STAD)

STAD uses the same team structure as TGT, but it uses quizzes instead of games. As a result, it takes less time for each lesson and is easier to use. STAD can be used in combination with TGT.

Jigsaw

In Jigsaw, students study units in teams of four or five members. Each team member has a specific topic, or section of material, that he or she must learn about. Members of different teams who have the same topics or sections meet in "expert groups"; the "experts" then return to their teams to teach what they have learned to their teammates.

Using Student Team Learning

To make it easy for teachers to use learning teams in their classrooms, we have prepared a teacher manual that describes how to use the cooperative classroom technique in your classroom. We are making it available at the cost of printing and mailing (we are a non-profit agency). With the "Using Student Team Learning" manual, you can set up and run a Student Team Learning Classroom in any subject, in grades from two through twelve, and in any kind of school.

Filmstrip and Tape

To further help you use the Student Team Learning techniques, we have prepared a filmstrip and audio tape that give you an introduction to learning team techniques. You may send a refundable deposit of $25.00 (returned when you mail back the filmstrip and tape), or you may keep the filmstrip and tape if you wish.

Curriculum Units

While you can use Student Team Learning with your own worksheets and quizzes, many teachers find it more convenient to buy Student Team Learning curriculum units. We have developed units for several grade levels in several subjects. Each unit covers about a semester of instruction in basic learning objectives and consists of single copies of worksheets and games/quizzes from which you are free to make spirit masters or class copies. If we have not listed materials in the subject you teach, write us. We are continuing to develop curriculum materials in history, social studies and other subjects. However, remember that you do not need to buy our materials. If we do not have materials available in your subject, you can still make your classroom a Student Team Learning classroom!

Workshops

Certified trainers in Student Team Learning, located throughout the United States, can provide standard workshop training after which participants will be able to use Student Team Learning in their classrooms. The workshop involves the participants directly in the team techniques. To find out about workshops or to schedule one, call Ruth Carter at 301-338-8249.

National Diffusion Network—State Facilitators

Your state facilitator, part of the U.S. Office of Education's National Diffusion Network, can help your school or district adopt Student Team Learning. The State Facilitator's job is to help school districts adopt educational programs such as Student Team Learning that have been proven to be effective.

To get the name and phone number of your state facilitator, call your State Department of Education or call Ruth Carter at the above number.

Approved for Title IV dissemination by the United States Office of Education – National Institute of Education Joint Dissemination Review Panel.

Evaluated in over fifteen large-scale classroom experiments reported in scientific journals, including Journal of Educational Psychology, Journal of Research and Development in Education, Psychology in the Schools, and Review of Educational Research.

Described in teacher and administrator professional publications, including American Education, Integrated Education, Education U.S.A., and ERS Bulletin.

Adopted by teachers in thousands of schools across the country.

Materials Available

_____ Starter Kit. Teacher's Manual plus all materials needed for teachers to use TGT, STAD, and Jigsaw with their own curriculum materials (These materials are also included in each set listed below.) $5.00

_____ Teacher's Manual only $3.00

_____ Student Team Learning Filmstrip $25.00

Each of the following sets of Student Team Learning curriculum materials contains the Teacher's Manual and one reproducible copy of all necessary worksheets, game sheets, quiz sheets, answer sheets, and individual and team scoring sheets.

Language Arts. Covers 20 basic objectives in punctuation, capitalization, usage and grammar.

_____ Grades 3-6 ..... $20.00

_____ Grades 7-8 ..... $20.00

Language Arts. Covers 100 basic objectives in study skills, language mechanics, word structure and word meaning.

_____ Grades 3-6 ..... $40.00

Mathematics. Covers 20 basic objectives at each grade level

_____ Grade 2 ..... $20.00

_____ Grade 3 ..... $20.00

_____ Grade 4 ..... $20.00

_____ Grade 5 ..... $20.00

_____ Grade 6 ..... $20.00

_____ Grade 7 ..... $20.00

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USING STUDENT TEAM LEARNING

The Johns Hopkins Team Learning Project

Robert E. Slavin
Center for Social Organization of Schools
The Johns Hopkins University

REVISED EDITION

PREFACE

This is the revised edition of *Using Student Team Learning*. The first edition was highly successful; more than twenty-five thousand were printed and distributed to teachers, administrators and researchers throughout the United States and several foreign countries over a two-year period. In the course of our continuing research and work with teachers, we became aware of a few problems and many new ideas about Student Team Learning that we have incorporated in this revised edition. The entire manual has been revised and updated, but the most important changes are as follows:

—STAD scoring procedures have been changed. Instead of achievement divisions and bonus points, the scores that students contribute to their teams are based on the degree to which their quiz scores are an improvement over their own past performance. This system has been tried and evaluated in several studies, and seems to be both very effective and easy for teachers and students to understand.

—A section on troubleshooting has been added to suggest solutions to the kinds of problems that come up most frequently.

—A section on Other Student Team Learning Techniques has been added. Some of these are designed to deal with special classroom situations or curriculum areas in which STAD, TGT, and Jigsaw are not appropriate, and some are modifications that may be attractive to some teachers as alternatives or additions to the basic methods.

—Dozens of smaller changes have been made to make the methods easier to understand, easier to use, and/or more applicable to a wider range of situations.

This revised edition is the outcome of a continuing process of research, development, field testing, and revision that dates back to 1970. Many individuals have been involved in creating, evaluating, and disseminating the Student Team Learning methods presented here. David DeVries and Keith Edwards developed Teams-Games-Tournaments based in part on work by Layman Allen, James Coleman, and others. Elliot Aronson, who developed the original Jigsaw method, has been most kind in giving us permission to include this technique and modifications of it in Student Team Learning. Gail Fennessey wrote the first TGT manual, of which this is a direct descendant, and was the principal editor of this edition. John Hollifield, J. Richard Lewis, Ruth Carter, Marshall Leavey, and Nancy Madden provided invaluable help in revising the manual; and they plus Louise Waynant, Mary Pat Hall, Patricia Kelly, and Robert Small made contributions to the Other Student Team Learning Techniques section. John Hollifield and Ruth Carter have ably managed the national dissemination of Student Team Learning, aided by Marshall Leavey, Hazel Thomas, J. Richard Lewis, and many others who have devoted time and energy to helping us spread the word.

It would be impossible to list all who have helped over the years to develop, research, and disseminate Student Team Learning, but in addition to those already named, the persons listed below have made outstanding contributions to this work:

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For information concerning any aspect of Student Team Learning, including how to obtain additional copies of this manual, curriculum materials for Student Team Learning, regional or local training workshops, or other information, please write to the above address or call the above telephone number.

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Do you remember being on a softball team, up at bat, with your teammates behind you shouting, "Hit it a mile!"? You knew you would do your best because your peers, the people who meant the most to you besides your family, depended on you. The thrill of coming through for the team, of being the "star" even for a day, is one that few persons forget. Being on a team, working for a cooperative goal, can be one of the most exciting experiences in life.

Can this kind of peer support for achievement, the easy acceptance of teammates, and the excitement of teamwork be transferred to the classroom? Such authors as James Coleman in *The Adolescent Society* (1961) and Urie Bronfenbrenner in *Two Worlds of Childhood* (1970) have suggested that teams can work in the classroom, and a long tradition of research in social psychology has shown that persons working for a cooperative goal come to encourage one another to do their best, to help each other do well, and to like and respect one another (Slavin, 1977a). What remains is an engineering task: How can team learning be made practical and effective in the classroom?

This question touched off ten years of research and development in classrooms, carried out primarily by four independent groups of researchers: Elliot Aronson, now at the University of California at Santa Cruz; David Johnson and Roger Johnson, at the University of Minnesota; Shlomo Sharan and Rachel Hertz-Lazarowitz at the University of Tel-Aviv, Israel; and David DeVries, Keith Edwards and Robert Slavin, at The Johns Hopkins University.

The result of this research and development may be one answer to a major contemporary dilemma of schools: techniques that achieve both humanistic educational goals and basic skills learning goals instead of achieving one at the expense of the other.

When we place students on learning teams, each student knows that a group of peers supports his or her academic efforts. This is true because, for a team to be successful, all the team members must do their best. Think back to the softball game. If you got that hit, your teammates went wild with approval; if you didn't, they consoled you and began encouraging the next batter. Can you remember anything like that happening in the classroom? If you can, it was probably in a team spelling bee or other team activity in which your academic efforts could help a group to be successful.

STUDENT TEAM LEARNING: THE BASIC TECHNIQUES

Educational research has demonstrated that heterogeneous teams made up of high and low performers, boys and girls, and students of different racial or ethnic backgrounds, can be successfully transplanted from the playing field to the classroom. Three Student Team Learning techniques have now been extensively researched and found to significantly increase student learning. These are Student Teams-Achievement Divisions, Teams-Games-Tournaments, and Jigsaw.

Student Teams-Achievement Divisions (STAD). Student Teams-Achievement Divisions was developed by Robert Slavin at The Johns Hopkins University. It is the simplest of the Student Team Learning techniques, and was originally designed as a simplification of Teams-Games-Tournaments (see below).

In STAD, students are assigned to four- or five-member learning teams. The teams are made up of high, average, and low performing students, boys and girls, and students of different racial or ethnic backgrounds, so that each team is like a microcosm of the entire class. Each week, the teacher introduces new material in a lecture or discussion. The team members then study worksheets on the material. They may work problems one at a time with a teammate, or take turns quizzing each other, or discuss problems as a group, or use whatever means they wish to master the material. The students are given worksheet answer sheets, so it is clear to them that their task is to learn the concepts, not to simply fill out the worksheets. Team members are told that they are not finished studying until they and their teammates are sure that they understand the material.

After the team practice session, students take quizzes on the material they have been studying. Teammates may not help one another on the quizzes; at this point they are on their own. The quizzes are scored in class or soon after class. These scores are formed into team scores by the teacher.

The number of points which each student contributes to his or her team's score is determined by the degree to which the student's quiz score exceeds the student's own past quiz average. This improvement score system gives every student a good chance to contribute maximum points to the team score if (and only if) the student does his or her best and shows substantial improvement or

gets a perfect paper. This system has been shown to increase student academic performance even without teams (see Slavin, 1980a), but it is especially important as a component of Student Team Learning. Think back to the softball game; the one problem in softball is the "automatic strikeout," the team member who cannot hit the ball no matter how much he or she practices. In Student Team Learning, no one is an automatic strikeout; and, by the same token, no one is guaranteed success, because it is improvement that counts.

The teams with the highest team scores are recognized in a weekly one-page class newsletter. The students who exceeded their own past records by the greatest amounts or who got perfect papers are also recognized in the newsletter.

STAD is not difficult to use. Following the steps outlined in this manual, a teacher need only assign his or her students to teams, allow students to study together, give a regular quiz, spend thirty to forty minutes calculating team scores, and prepare a newsletter at the end of the week. However, the change in the classroom is dramatic. Students begin helping each other to learn basic skills instead of making fun of those students who always know or do not know the answer. They begin to see the teacher as a resource who has valuable information that they need to accomplish something important, more like a coach than a boss. They begin to see learning activities as cooperative instead of independent, as enjoyable instead of boring, as under their own control instead of under the teacher's thumb. Classmates begin to have feelings of comraderie that were previously common on the athletic field but not in the classroom. In the integrated classroom, this new sense of comraderie extends across racial or ethnic barriers to create new friendships that would be less likely to exist in the traditionally structured classroom. In the mainstreamed classroom, this comraderie extends across an even larger barrier, that between physically or academically handicapped students and their classmates, to create a climate of acceptance instead of scapegoating. Researchers have documented all of these effects of Student Team Learning and many others (see below); what is so striking about these outcomes is that they all stem from the same simple change in classroom procedure.

Teams-Games-Tournaments (TGT). Teams-Games-Tournaments uses the same teams, instructional format, and worksheets as STAD. However, in TGT, students play academic games to show their individual mastery of the subject matter. These games are played in weekly tournaments. Students compete in the tournaments with members of other teams who are comparable in past performance. The competitions take place at tournament tables, three students to a table. Thus, a high performing student from the "Fantastic Four" might compete with a high performer from the "Pirates" and one from the "Superstars." Another table might have average performing students from the "Pirates," the "Masterminds," and the "Chiefs," and another could have low performers from the "Superstars," "Tigers," and "Masterminds." Of course, the students are not told which is the highest table, which is next, and so on, but they are told that their competition will always be fair. While teams stay together for about six weeks, the tournament table assignments are changed every week according to a system that maintains the equality of the competition. This equal competition makes it possible for students of all levels of past performance to contribute maximum points to their team's score if they do their best, in the same way as the improvement score system in STAD does.

After the weekly tournament, the team scores are figured and a newsletter recognizing the highest scoring teams and tournament table winners is distributed. Thus, TGT uses the same pattern of teaching, team practice, individual assessment based on equal opportunities for success, and team recognition as that used in STAD, but its use of academic games instead of quizzes makes TGT even more exciting and motivating than STAD. In fact, TGT generates so much excitement that getting students to stop can be a problem. For example, in one study in a Baltimore junior high school which is attended by a substantial number of students who ride buses from the inner city, every student in two classes stayed after school (and missed the buses) to attend a tie-breaker playoff in a TGT tournament. Teachers using TGT have reported that students who were never particularly interested in school were coming in after class to get materials to take home to study, asking for special help, and becoming active in class discussions.

Jigsaw. While STAD and TGT were developed at Johns Hopkins University, Jigsaw was originally designed by Elliott Aronson and his colleagues at the University of Texas and then at the University of California at Santa Cruz. In Aronson's Jigsaw method, students are assigned to six-member teams. Academic material is divided into five sections. For example, a biography might be divided into early childhood, education, first accomplishments, major setbacks, and later life. Each team member reads his or her own unique section, except for two students who share a section. Next, members of different teams who have studied the same sections meet in "expert groups" to discuss their sections. Then, the students return to their teams and take turns teaching their teammates

about their sections. Since the only way students can learn the sections other than their own is to listen carefully to their teammates, they are motivated to support and show interest in each others' work.

A modification of Jigsaw developed by Slavin at Johns Hopkins University is emphasized in this manual. In this method, called Jigsaw II, students work in four- to five-member teams as in TGT and STAD. Instead of each student having a unique section, all students read a common narrative, such as a book chapter, a short story, or a biography. However, each student is given a topic on which to become an expert. The students who have the same topics meet in expert groups to discuss them, and then return to their teams to teach what they have learned to their teammates. Finally, students take individual quizzes, quiz scores are formed into team scores using the improvement score system of STAD, and the highest scoring teams and individuals are recognized in a class newsletter.

For more information on Aronson's original Jigsaw method, see Aronson (1978).

A Day in the Life of Jim James

To illustrate what goes on in Student Team Learning classes, let's follow a hypothetical student through a day as he experiences three basic techniques—Jigsaw II, TGT, and STAD. We have chosen to follow a junior high school student, but the basic experience would be the same for an elementary or high school student.

Jim James is an average seventh grader; active, inquisitive, and irreverent. He attends Hooperville Junior High. Jim's first class is social studies, where his teacher, Mr. Thomas, is using Jigsaw II to teach a unit on Alexander Hamilton. Yesterday, Mr. Thomas handed out expert sheets and social studies books. The expert sheet contained four topics related to a biography of Alexander Hamilton. Mr. Thomas assigned Jim topic number 4, which is "What were Hamilton's political beliefs?" Everyone read the biography of Hamilton during the last period.

Today, Mr. Thomas asks the class to be quiet. "Now," he says, "you may all get into your expert groups. Each team member who has Hamilton's early life may sit over here." Mr. Thomas points out places for each expert group to meet, and the students with the same topics get together. Cynthia, from one of the other teams, starts the discussion at Jim's table: "The main thing I got from the chapter is that Hamilton was always disagreeing with Thomas Jefferson and Aaron Burr." Jim says, "Yes, but that's not the main point. I think we should concentrate on whether Hamilton was really a royalist or not." The group members talk for about twenty minutes, sharing their ideas about what they have read and what are the important things about it. At the end of that time, Mr. Thomas asks the students to return to their teams.

Jim sits with his teammates. Soo Mi, a Korean student who studied about Hamilton's early life, begins to teach her topic first. She has problems because of her poor English, but her teammates encourage her to keep going because they need to understand what she has to say. She tells how Hamilton was born in Nevis, in the Caribbean. Sam asks where the Caribbean is, and Yolanda tells him. Then Soo Mi continues to explain how Hamilton came to America, his first job, his role in the American Revolution, and other details. Sam tells how Hamilton was involved in the ratification of the Constitution. Next, Yolanda tells the group about the Federalist Papers, and other writings by Hamilton. Finally, it's Jim's turn, and he describes Hamilton's political positions. During this time, Mr. Thomas is moving from team to team, answering questions, clearing up disagreements, and focusing individual students on important points. Finally, Mr. Thomas has the students put away their books, and he hands out a quiz on the life of Alexander Hamilton. Jim does well on everything except one of the questions about Hamilton and the ratification of the Constitution, and reminds himself to ask Sam more questions the next time they do a Jigsaw unit. The bell rings, and Jim is off to his next class, English.

Jim's English class is using STAD, and today is worksheet day. Yesterday, Mrs. Cooper introduced the idea of commas in a series to the whole class. Today the teams will study worksheets about the use of commas to prepare for tomorrow's quiz

Jim's team is called "Cooper's Raiders." As the class begins, the Raiders assemble around a table to study their worksheets. Jim pairs off with Alex and quizzes him on the material. The first item is "My dog buried a bone a boot and an apple in the back yard." Alex says, "That's easy. The commas go after 'bone' and 'apple.' " Jim disagrees, and they check the answer sheet. Sure enough, Jim is right. He explains to Alex that commas go after each item in a series except the last item. Alex complains that last year he had been taught that a comma isn't needed after the item in a series that comes before the "and." Jim and Alex call Mrs. Cooper over to explain, and she agrees with Jim that commas go after all items in a series except the last, but also tells Alex that many people do disagree with this rule. She thanks the students for doing such a good job helping each other.

After Jim has quizzed Alex on most of the items, Alex quizzes Jim. When both students feel confident about their abilities to put commas in a series,

they check to see how their other teammates, Cynthia and Diane, are doing. Everyone on the Raiders wants to get a good score on the quiz. The Raiders finished last in the first week's team competition, fourth in last week's, and now they hope to break into the top three, to have their team especially mentioned in the class newsletter. By the end of the period, all four teammates feel confident and are looking forward to the quiz the next day.

After gym and lunch, Jim goes to math class. This class is using TGT, and today is tournament day — the high point of the week. Jim's team, the "Euclid Kids," has been studying geometry hard all week because the team members want to keep their first-place position in the TGT competition. In fact, Jim and one of his teammates stayed after school yesterday to ask for material to study at home! Because his grades in math had always been poor, Jim had started the TGT competition at one of the lower tables, competing with others who had had poor grades in math. However, Jim had been the highest scorer in his tournaments and had gradually moved to one of the higher tables. His competition is stiffer than ever.

As the students arrive, Mr. Cartwright assigns them to their tournament tables, where they will compete to add points to their team scores. Jim worries a little as he sees who his two competitors are. One of them, Charlene, has a reputation as the smartest girl in the class, and the other, Luis, is a student who, like Jim, has been winning consistently in the TGT tournaments. Can Jim come through for the Euclid Kids this week?

The TGT game consists of geometry items like the ones the students studied. Jim, Luis, and Charlene draw cards to see who goes first, and Jim wins. He picks the top card, which has the number "21" on it. He looks down his game sheet for item 21, which reads: "What is the circumference of a circle with a diameter of 3 centimeters?"

This question hadn't been on the worksheets he had studied with his team, but Jim thinks he understands circles pretty well. He scribbles some figures on a piece of paper and says "18.8 centimeters."

Now Luis, sitting on Jim's left, has the right to challenge. He does some figuring and then challenges. "I think it's 9.4 centimeters." Charlene checks the answer sheet. "Luis is right," she says, "it's 9.4 centimeters. Jim, I think you were thinking of radius instead of diameter." Luis keeps card number 21 to count as his point for a correct answer, and picks the next card to indicate the next question in the tournament. Play continues around the table all period. At the end, Luis has the most cards and thus contributes six points to his team's score; Jim is next, and thus contributes four; and Charlene is third, and contributes two points to her team's score. When the period is over, Jim finds his teammates and tells them how he did. They're glad that he did so well against such tough competition. "I think we'll still be in the top three," one of his teammates says. "I won at my table and Susan won at hers. If we aren't in first place this week, we'll get 'em next week!"

As Jim is going home on the bus, he thinks about how much his feelings about school have changed since he began working in teams with other students. He recalls how much of a chore studying had been, and how he used to feel that he didn't know many of the other students very well. School had changed from a place where the other students didn't care if you came to school to one in which other students called you up if you were absent to see what had happened to you.

STUDENT TEAM LEARNING: THE RESEARCH EVIDENCE

Basic Skills

Student Teams-Achievement Divisions. STAD has been evaluated in six studies involving more than 2000 students in grades three through nine. In four studies, STAD was significantly more effective than traditional control methods in increasing learning of basic skills; in the other two, STAD and control were equally effective (see Slavin, 1978). In no case have STAD students learned less than control students. Interestingly, the effects of STAD have been like those of the Jigsaw technique (see below) in that its effects have been more dramatic for minority students than for white students. In one ten-week study, black students in a STAD class studying grammar and punctuation gained about 1.7 grade equivalents on a standardized language arts test. White students in the STAD class also gained 1.7 grade equivalents. However, while white students in the control class gained 1.3 grade equivalents, black students in the control class gained only 0.6. This means that, although it was helpful for white students to be in the STAD class, it was extremely valuable for the black students (Slavin, 1977b). This trend was also found in a second study (Slavin and Oickle, 1980).

Teams-Games-Tournaments. TGT has been evaluated in ten studies involving nearly 3000 students in schools across the USA. In seven of the studies, TGT students learned significantly more than students in traditionally structured classes studying the same material. In the other three studies, TGT students learned only slightly more than the control students, but in no study have TGT students learned less. The effectiveness of TGT in

increasing learning of basic skills has been demonstrated in grades three through nine, in subject areas ranging from mathematics to grammar to reading vocabulary, and in urban, suburban, and rural schools (see DeVries and Slavin, 1978).

Jigsaw. As of this writing, the effects of the original Jigsaw technique on basic skills learning have been evaluated in only one study. In that study, black and Mexican-American students in the Jigsaw classes learned more than their counterparts in traditional classes, but white students did about the same in either treatment. However, the study took place for only two weeks; a longer study might show greater effects (Lucker, Rosenfield, Sikes, and Aronson, 1976). A study of Jigsaw II did find greater academic achievement than in a control condition, and these achievement differences were still maintained ten weeks after the end of the study (Ziegler, 1980).

Other studies have also shown positive effects of learning cooperatively on student achievement. In one study in which STAD, TGT, and Jigsaw II were used together, there were significantly positive effects on language arts and reading achievement (Slavin and Karweit, 1979). Another study in Israel (Sharan, Ackerman, and Hertz-Lazarowitz, 1980) demonstrated that when students worked in small groups on projects and were allowed to decide how to organize their own activities to produce group reports, they gained in conceptually complex skills but not in basic skills. This is in contrast to the more structured STAD and TGT methods, where the research shows the greatest gains for such basic skills as mathematics, language mechanics, and reading vocabulary. Other researchers, such as Wheeler (1977) and Hamblin, Hathaway, and Wodarski (1971) have also found that when students work together to achieve a common goal, they learn more than they do in the traditional classroom.

It seems safe to say that Student Team Learning can have the effect that parents, school boards, and teachers are increasingly demanding: more learning of basic skills. In fact, in the case of TGT and STAD, the more the curriculum is oriented toward basic skills, the greater the learning.

Integrating the Desegregated Classroom

One of the most important effects that Student Team Learning has is on friendships among students of different ethnic backgrounds in desegregated classes. Anyone who has spent much time in a desegregated secondary school knows that white students associate mostly with white students, black students associate mostly with black students, Hispanic students with Hispanic students, and so on. Seeing this is always a blow to those who hoped that widespread desegregation would lead to greatly increased contact, and thereby respect and liking, among students of different ethnic backgrounds. We should probably have been less surprised; in most desegregated schools, black, white, and Hispanic students come from separate neighborhoods, ride different buses, and often come from different elementary schools.

In several studies in which Student Team Learning was *not* used, beginning seventh graders in traditionally structured, racially mixed classes were asked to name their friends. When the question was repeated a semester later, the proportion of black students who named white students as their friends and white students who named black students either stayed the same or actually decreased. Many other researchers have found the same discouraging pattern (see Gerard and Miller, 1975). Apparently, simply assigning black and white students to the same classes does not increase friendship across racial lines.

A Team Solution. Student Team Learning is an obvious solution to the problem of integrating the desegregated classroom. We know from decades of research that when people work together for a common goal, they gain in respect and liking for one another. When Student Team Learning techniques were applied in desegregated classrooms, that is exactly what was found. In three studies, TGT students increased the number of friends they named of a different ethnic group far more than did control students (DeVries, Edwards, and Slavin, 1978). Three additional studies (Slavin, 1977c; Slavin, 1979; Slavin and Oickle, 1980) found STAD to have the same effect. In fact, in many of these studies, the Student Team Learning students began to choose their classmates as friends as though ethnicity were not a barrier to friendship at all. This never happened in the control classes. Jigsaw II (Gonzales, 1979; Ziegler, 1980) and techniques developed by David Johnson at the University of Minnesota (Cooper, Johnson, Johnson and Wilderson, 1980) have achieved the same results. One of the STAD studies (Slavin, 1979) and one of the Jigsaw II studies (Ziegler, 1980) included followups of the intergroup friendship measures several months after the studies ended and found that there were still more cross-ethnic friendships made by students who had been in the Student Team Learning classes than were made by control students.

John and Sue Ann: Teams In Action. An example will illustrate what can happen in a Student Team Learning class. This was a fifth grade class that was just starting to use STAD. The teacher was announcing assignments to teams. She read off the name of John, a black student, and he took his place at a table that had been set up for team

practice. John was one of the brightest students in the class. Then the teacher read off Sue Ann's name. Sue Ann was white, a poor student, and frequently absent. John was aghast and refused to work with her. Sue Ann refused to sit at the table with John. The teacher let Sue Ann sit away from the team until she was ready to join in, although her quiz scores still counted in the team score.

Two weeks later, things had changed. There were John and Sue Ann, chatting away about a lesson like old friends. The teacher was asked what had happened — there were two other students on the team, and John and Sue Ann could have worked with them. Why were they working together?

It turned out that John and Sue Ann were on a team that had a strong desire to win in the competition for team points. In particular, Sue Ann wanted to be mentioned in the newsletter so that she could impress her mother. After several days of working by herself, Sue Ann finally took the plunge — she asked John a question. Because John knew that the whole team had to do well, he answered her question and continued to explain some other things that he knew she didn't know. In a word, John and Sue Ann needed each other because they valued their team's success. That need led to the breakdown of a formidable set of barriers to friendship — black-white, male-female, and high performer-low performer. John and Sue Ann probably did not become best friends. But working on the team together made possible a level of contact and mutual good feeling that would have been quite unlikely otherwise.

Of course, not every team works perfectly, and in some cases long-standing friendship patterns are hard to break. However, because of the strength and consistency of the evidence, many who have been working with cooperative learning methods in desegregated settings now frankly believe that any desegregated school that is not using these methods in some form is not doing all it can to improve relations among students of different ethnicities.

Mainstreaming

Ethnicity is a major barrier to friendship, but it is not as large as the one between physically or academically handicapped students and their normal-progress peers. Public Law 94-142 has mandated that as many students as possible be placed in regular classrooms. This has created an unprecedented opportunity for handicapped students to take their place in the mainstream of society, but it has also created enormous practical problems for classroom teachers and often leads to social rejection of the handicapped students.

Once again, Student Team Learning is an answer. In the Student Team Learning classroom, mainstreamed students are assigned to teams the same way other students are. If these students are physically handicapped, their classmates come to value the contribution they make to the team, but above all they come to see them as important individuals, not just as "crippled." If the mainstreamed students are academically handicapped, the opportunity they have to contribute points to their teams if they show improvement (STAD and Jigsaw II) or if they succeed in competition with others of similar levels of performance (TGT) also makes these students valued by their teammates. The teamwork makes them "one of the gang" instead of separate and odd, and provides them with teammates who encourage and assist their academic progress.

The research on Student Team Learning and mainstreaming has focused on the academically handicapped child. In one study, STAD was used to attempt to integrate students performing two years or more below the level of their peers into the social structure of the classroom. The use of STAD significantly reduced the degree to which the normal-progress students rejected their mainstreamed classmates, and increased the academic achievement and self-esteem of all students, mainstreamed as well as normal-progress (Madden and Slavin, 1980). Other research using cooperative teams has also shown significant improvements in relationships between mainstreamed academically handicapped students and their normal-progress peers (Ballard, Corman, Gottlieb, and Kaufman, 1977; Cooper, Johnson, Johnson, and Wilderson, 1980).

Perhaps the most important fact about Student Team Learning in the mainstreamed classroom is that these techniques are not just good for the handicapped students, they are good for all students. They offer the teacher a chance to incorporate the mainstreamed students into the classroom social system and meet the individual needs of these students while doing not just as well, but better, with the non-mainstreamed students. A section in this manual under "Other Student Team Learning Techniques" describes use of Student Team Learning in the mainstreamed classroom in more detail.

Liking of Others and Liking of Self

One of the most important aspects of a student's personality is his or her self-esteem. Many people have assumed that self-esteem is a relatively stable personal attribute which schools have little ability to change. However, several of the researchers working on Student Team Learning

techniques have found that teams do increase students' self-esteem. Students in Student Team Learning classes have been found to like themselves more than do students in traditional classes. These improvements in self-esteem have been found for TGT (DeVries, Lucasse, and Shackman, 1979), for STAD (Madden and Slavin, 1980), for Jigsaw (Blaney, Stephan, Rosenfield, Aronson, and Sikes, 1977), and for the three methods combined (Slavin and Karweit, 1979). Why does this occur? First, it has been consistently found that TGT and STAD students report that they like others and feel liked by others more than control students do (Slavin, in press). Liking of others and feeling liked by others are obvious components of feeling worthwhile.

Second, it seems likely that students feel (and are) more successful in their school work when they work in teams. This could also lead to an increase in self-esteem. Whatever the reason, the effect of Student Team Learning on self-esteem may be particularly important for long-term effects on mental health. A student who has had a cooperative, mutually supportive experience in school may be less likely to be antisocial, withdrawn, or depressed in later life. We have only scratched the surface in understanding what kinds of long-term benefits for mental health might result from long-term experience of cooperative learning teams.

Other Outcomes

In addition to students' achievement, positive intergroup relations, acceptance of mainstreamed classmates, liking of others, and self-esteem, effects of Student Team Learning have been found on a variety of other important educational outcomes. One of those is increased positive interaction among emotionally disturbed adolescents (Slavin, 1977d). Others include liking of school, peer norms in favor of doing well academically, students' feeling that they have control over their own fates in school, and student cooperativeness and altruism (see Slavin, in press). TGT (DeVries and Slavin, 1978) and STAD (Slavin, 1978) have been found to have positive effects on students' time on-task, a variable that is coming to take on increasing importance as educators become more concerned about the productivity of schools. What is striking about the research on various cooperative learning methods is the breadth of outcomes associated with them. There are many educational methods that have been found to improve student achievement, a few that improve intergroup relations, mainstreaming, or student self-esteem, but how many educational methods can claim to have documented positive effects on such a variety of student outcomes in well-controlled field experiments in schools? Positive effects on all variables measured are not found in every Student Team Learning study, but negative effects are almost never found, and the ratio of significantly positive to equal findings on the major variables (achievement, intergroup relations, self-esteem) is about two-to-one (Slavin, 1980b; Slavin, in press).

IS STUDENT TEAM LEARNING PRACTICAL?

Many of the educational innovations introduced in recent years have required enormous amounts of teacher training and/or money to actually implement. Fortunately, Student Team Learning techniques are quite simple. More than two thousand teachers located in every state in the USA have used STAD, TGT, or Jigsaw with nothing more than a one-day workshop and this manual and available curriculum materials. Many have used these methods with the manual alone. It is possible to obtain curriculum materials for STAD and TGT in most elementary and secondary subjects, distributed by the Johns Hopkins Team Learning Project (see below for address), or it is easy for teachers to make their own materials. Student Team Learning methods have been used in grades one through college (although mostly in grades two through nine), in subjects ranging from mathematics to science to social studies to English to foreign language, and in every part of the United States and several foreign countries. They have been used for purposes ranging from improving basic skills for average students, for low-performing students, or for gifted students, to improving intergroup relations, to making mainstreaming more effective, to just getting students more excited about school. Not every teacher will feel comfortable using Student Team Learning, but most who do are enthusiastic about it, and many report dramatic differences in their own feelings about teaching.

Student Teams-Achievement Divisions (STAD) and Teams-Games-Tournaments (TGT) are certified by the U.S. Department of Education's Joint Dissemination Review Panel (JDRP) for their effects on basic skills, and the entire Student Team Learning program is certified by the JDRP for effects on intergroup relations. This means that these programs are eligible for dissemination by the National Diffusion Network, which has a system of state facilitators in every state to help school districts adopt JDRP-approved programs.

To obtain information on training, curirculum materials, or filmstrips, or to find the name of your state facilitator, write or call the Johns Hopkins Team Learning Project:

The Johns Hopkins Team Learning Project
Center for Social Organization of Schools
Johns Hopkins University
3505 North Charles Street
Baltimore, Maryland 21218
(301) 338-8249

There are three basic Student Team Learning techniques: Student Teams-Achievement Divisions (STAD), Teams-Games-Tournaments (TGT), and Jigsaw II. These techniques have much in common: four- to five-member heterogeneous teams; team practice sessions in which students try to master academic materials and to help their teammates do so; individual assessment, in which students show how much they know; adjustment of individual scores so that the points each student contributes to the team score represent an *improvement* over the student's past performance; team scores based on the sum of individual performances; and team recognition, in the form of a class newsletter or bulletin board.

Despite these many similarities, the structural differences among the three basic methods are important ones for practice. These differences are summarized below.

Student Teams-Achievement Divisions = Teams + Quizzes + Improvement Scores

Teams-Games-Tournaments = Teams + Tournaments

Jigsaw II = Teams + Expert Groups + Quizzes + Improvement Scores

All three methods have teams that are heterogeneous, work together to master a set of material, and receive team recognition for doing well academically. STAD and Jigsaw II typically use quizzes to individually assess student progress and to compute team scores, and they use an improvement score system to allow students to contribute maximally to their team scores by doing better than they have done in the past. In addition to the teams, quizzes, and improvement scores, Jigsaw uses expert groups in which students study their topics before returning to teach their teams. TGT uses academic game tournaments to assess individuals and to allow students equal chances to contribute to their team scores by having them compete against others of similar past performance.

Choosing A Technique

Student Teams-Achievement Divisions. STAD is the simplest of the Student Team Learning methods. It is less exciting than TGT because it uses individual quizzes instead of tournaments, but for the same reason it is preferable to TGT in situations in which the noise and activity that are part of the tournament are a problem. STAD also takes less time than TGT, as quizzes usually take less time than games. Many teachers use STAD because it is clearly focused on team cooperation and does not include individual competition as in TGT, and others prefer it because the quizzes give them regular information on student progress. The use of an improvement score system, which rewards students for improving their level of quiz performance, also makes STAD especially attractive to many teachers. Some teachers combine TGT and STAD, alternating tournaments and quizzes, or using the tournaments once each month as a culminating activity for a series of weekly STAD units. Both TGT and STAD are most appropriate for subject areas in which there is one right answer, such as mathematics, language mechanics, science, foreign language, and such parts of social studies as geography and graph reading.

Teams-Games-Tournaments. TGT is the most exciting and enjoyable of the Student Team Learning techniques. Almost all students enjoy the face-to-face competition on academic games, especially because the equal competition gives each student a substantial chance of winning each week. The games also provide extensive practice of the instructional content, and because they are so much fun, they motivate students to come to class and to prepare outside of class. The face-to-face competition does create a high level of noise and activity. Of course, this noise is a learning noise, but it does create problems in some schools or with some teachers.

Jigsaw II. Jigsaw is like STAD rather than TGT in terms of the level of excitement (and noise) generated. The peer tutoring is more structured in Jigsaw than in STAD or TGT, and there is more emphasis on the unique contribution that each student makes. Jigsaw is most appropriate in the curriculum areas where STAD and TGT are least appropriate — social studies, literature and parts of science that involve reading of narrative materials. Jigsaw also provides extensive practice in reading for meaning in whatever subject it is used. Both the original form of Jigsaw, developed by Aronson and his associates, and a modification of this method called Jigsaw II are presented in this manual. Jigsaw II is emphasized, as it requires far less teacher preparation than original Jigsaw, but original Jigsaw has other benefits that may outweigh this additional effort. If you are planning to use Jigsaw or Jigsaw II, read the overviews for both forms before you choose one or the other.

Other Student Team Learning Techniques. Several additional means of using Student Team Learning are described at the end of this manual. Before deciding to use STAD, TGT, or Jigsaw, you may wish to review these other methods. Some of them are designed to deal with special problems, such as individualization and mainstreaming. Some are extensions of the basic models, such as a combination of Student Team Learning and Mastery Learning, and a method that eliminates the competitive aspects of Student Team Learning. The rest are designed for special parts of the curriculum, such as group discussions and group projects, English composition, writing mechanics, and oral reading practice. Also included is advice on how to use Student Team Learning in several subjects at the same time and how to create your own modifications of Student Team Learning.

One note of caution about these other techniques. While the basic Student Team Learning methods, STAD, TGT, and Jigsaw, have been used in thousands of classrooms and have therefore had their "bugs" worked out long ago, the modifications and extensions of Student Team Learning have been much less widely used and are more experimental. It is a good idea to try one of the three basic methods before attempting any of the modifications, unless your situation demands the use of one of the modifications.

In summary, choose STAD or TGT if your curriculum is objective, Jigsaw if it is narrative, and one of the modifications if the three basic methods do not meet your needs. Choose TGT over STAD if you want the excitement and extensive practice of academic games, or STAD over TGT if you want a quieter, less time-consuming method or if you want to have quizzes to monitor student progress.

Once you have made your choice, read the directions for the technique you have chosen completely before you use it in the classroom. Many of the details of the techniques are explained in the instructions for introducing the techniques to students.

If you have never been to a Student Team Learning workshop, it is a good idea to get together with other teachers and do a "dry run" of the techniques. This is particularly true for the tournaments in TGT and for the general structure in Jigsaw — experiencing the techniques helps you anticipate student questions.

Whatever you do, don't worry! Hundreds of teachers have used Student Team Learning techniques with the manual alone, and we are not aware of many failures. The techniques are simple, and they make sense to students as well as teachers. Even if you don't understand every detail, just start in; soon you'll be an expert!

Overview

STAD is made up of five interlocking components: class presentations, teams, quizzes, individual improvement scores, and team recognition. These components are described below.

Class Presentations. Material in STAD is initially introduced in a class presentation. This is most often a lecture-discussion conducted by the teacher, but could include audio-visual presentations. Class presentations in STAD differ from usual teaching only in that they must be clearly focused on the STAD unit. In this way, students realize that they must pay careful attention during the class presentation, because doing so will help them to do well on the quizzes, and their quiz scores determine their team scores.

Teams. Teams are composed of four or five students who represent a cross-section of the class in academic performance, sex, and race or ethnicity. The major function of the team is to prepare its members to do well on the quizzes. After the teacher presents the material, the team meets to study worksheets or other material. The worksheets may be materials obtained from the Johns Hopkins Team Learning Project, or they may be teacher-made. Most often, the study takes the form of students quizzing one another back and forth to be sure that they understand the content, or working problems together and correcting any misconceptions if teammates make mistakes.

The team is the most important feature of STAD. At every point, emphasis is placed on team members doing their best for the team, and on the team doing its best to help its members. The team provides the peer support for academic performance that is important for effects on learning, and the team provides the mutual concern and respect that are important for effects on such outcomes as intergroup relations, self-esteem, and acceptance of mainstreamed students.

Quizzes. After approximately one period of teacher presentation and one period of team practice, the students take individual quizzes. The quizzes are composed of course content-relevant questions that students must answer. They are designed to test the knowledge gained by students from class presentations and during team practice. Students are not permitted to help one another during the quizzes. This makes sure that every student is individually responsible for knowing the material.

Individual Improvement Scores. The idea behind the individual improvement scores is to give each student a performance goal that the student can reach, but only if he or she works harder than in the past. Any student can contribute maximum points to his or her team in this scoring system, but no student can do so without showing definite improvement over past performance. Each student is given a "base" score, the minimum score the student should achieve on each quiz. Then students earn points for their teams based on how much their quiz scores exceed their base scores. Base scores are recomputed after every two quizzes so that if a student starts performing better, he or she can be challenged to improve further, but if a student's base score was set too high, it can be adjusted to a more realistic level.

Team Recognition. A newsletter is the primary means of rewarding teams and individual students for their performance. Each week, the teacher prepares a newsletter to announce team scores. The newsletter also recognizes individuals who showed the greatest improvement or got perfect papers, and reports cumulative team standings. In addition to or instead of the newsletter, many teachers use bulletin boards, special privileges, small prizes or other rewards to emphasize the idea that doing well as a team is important.

Preparing to Use STAD

Materials. STAD can be used with curriculum materials specifically designed for Student Team Learning and distributed by The Johns Hopkins Team Learning Project, or it can be used with teacher-made materials. As of this writing, Johns Hopkins' materials are available in Mathematics for grades two through eight, plus High School Consumer Mathematics, Algebra I, and Geometry; Elementary and Junior High School Language Arts; Elementary and Secondary Nutrition; and Junior High School Life Science and Physical Science. Additional units in Secondary Social Studies and Functional Reading are also in preparation.

However, it is quite easy to make your own materials. Simply make a worksheet, a worksheet answer sheet, and a quiz for each unit you plan to teach. Each unit should take three to five days of instruction. The individual improvement score system is based on thirty-item quizzes, because this is the length of the quizzes in the Johns Hopkins Team Learning materials. For this reason, it is best to include in your quizzes some number of items that divides evenly into 30, such as 10, 15, or 30, although Appendix 1 transforms scores of quizzes that have 8, 10, 12, 15, 20, and 25 items into equivalents of thirty-item quizzes. See Appendix 4 for

Instructions for making your own curriculum materials for STAD.

Assigning Students to Teams. A team in Student Team Learning is a group of four or five students who represent a cross-section of the class in past performance, race or ethnicity, and sex. That is, a four-person team in a class that is one-half male, one-half female, and three-quarters white, one-quarter minority would have two boys and two girls and three white students and one minority student. The team would also have a high performer, a low performer, and two average performers. Of course, "high performer" is a relative term; it means high for the class, not high compared to national norms.

Students are assigned to teams by the teacher, rather than by choosing teams themselves, because students tend to choose others like themselves. You may take likes, dislikes, and "deadly combinations" of students into account in your assignment, but do not let students choose their own teams. Instead, follow these steps:

1. *Make Copies of Team Summary Sheets and Quiz Score Sheets.* Before you begin to assign students to teams, you will need to make one copy of a Team Summary Sheet for every four students in your class and one copy of a Quiz Score Sheet for every two weeks you plan to use STAD. These forms are reproduced in the Appendix and can be copied from there.

2. *Rank Students.* On a sheet of paper, rank the students in your class from highest to lowest in past performance. Use whatever information you have to do this — test scores are best, grades are good, but your own judgment is fine. It may be difficult to be exact in your ranking, but do the best you can.

3. *Decide on the Number of Teams.* Each team should have four members if possible. To decide how many teams you will have, divide the number of students in the class by four. If the number is even, the quotient will be the number of four-member teams you should have. For example, if there are 32 students in the class, you would have eight teams with four members each.

If the division is uneven, the remainder will be one, two, or three. You will then have one, two, or three teams composed of five members.

4. *Assign Students to Teams.* When you are assigning students to teams, balance the teams so that (a) each team is composed of students whose performance levels range from low to average to high, and (b) the average performance level of all the teams in the class is about equal. There are two reasons for this. First, students with different performance levels within a team can tutor each other. Second, by providing balanced teams, no single team has an advantage in academic performance. To assign students to teams, use your list of students ranked by performance. Assign team letters to each student. For example, in an eight-team class you would use the letters A through H. Start at the top of your list with the letter "A"; continue lettering toward the middle. When you get to the last team letter, continue the lettering in the opposite order. For example, if you were using the letters A-H (as in Figure 1), the eighth and ninth students would be assigned to Team H, the tenth to Team G, the next to Team F, and so on. When you get back to letter "A," stop and repeat the process from the bottom up, again starting and ending with the letter "A."

Figure 1. Assigning Students to Teams

	Rank Order	Team Name
High-Performing Students	1	A
	2	B
	3	C
	4	D
	5	E
	6	F
	7	G
	8	H
Average-Performing Students	9	H
	10	G
	11	F
	12	E
	13	D
	14	C
	15	B
	16	A
	17	
	18	
	19	A
	20	B
	21	C
	22	D
	23	E
	24	F
	25	G
	26	H
Low-Performing Students	27	H
	28	G
	29	F
	30	E
	31	D
	32	C
	33	B
	34	A

Notice that two of the students (17 and 18) in Figure 1 are not assigned at this point. They will be added to teams as fifth members, but first the teams should be checked for race or ethnicity and

sex balance. If, for example, one-fourth of the class is black, approximately one student on each team should be black. If your class has more than two major ethnic groups, you should still assign students to teams to represent their proportion in the class. If the teams you have made based on performance ranking are not evenly divided on both ethnicity and sex (they will hardly ever be balanced on the first try), you should change team assignments by trading students of the same approximate performance level, but of different ethnicity or sex, between teams until a balance is achieved.

When you have done all the trading for ethnicity and sex balance, you may verify that the ranks on the teams are indeed comparable by adding the team members' ranks within the ordered list. Divide this sum by the number of team members. If none of the teams is more than three or four points from other teams' performance averages, you're doing fine. For example, in Figure 1, Team A's average is $1 + 16 + 19 + 34 = 70 \div 4 = 17.5$ and Team C's is $3 + 14 + 21 + 32 = 70 \div 4 = 17.5$. Even if students 17 or 18 had been added to either Team A or C the results would be comparable.

The assignment of students as described above will produce "equal" teams on paper, but it does not consider factors such as the maturity of the teammates or disruptive combinations. For this reason, you may wish to make minor variations in your assignments. Teams can be viewed as having equal resources even though the averages of members' ranks are not exactly equivalent.

5. *Fill Out Team Summary Sheets.* After you have finished assigning all students to teams, fill in the names of the students on each team on your Team Summary Sheets, leaving the "team name" blank.

If you have six or more teams, divide them into two leagues. Teachers often name the two leagues (e.g., American and National).

Determining Initial Base Scores. In addition to assigning students to teams, you will need to determine initial base scores for each student. To do this, refer to the ranked list of students you used to make team assignments. If your class has 25 or more students, give the first three students an initial base score of 20; the next three, an initial score of 19; the next three 18; and so on until you have assigned each student an initial base score. Put this information on a Quiz Score Sheet. If your class has 24 or fewer students, give the first two students an initial base score of 20; the next two, 19; and so on. Note that these base scores are just a start; they will be modified to reflect the students' actual scores after every two quizzes. A base score is the *minimum* you expect students to make on a thirty-item quiz. When the adjustments are made after every two quizzes, the base score will eventually be set approximately five points below the student's average quiz scores in the past. If you have students at the very bottom of your list whom you feel have little chance to make even their base scores, you should set their base scores a little lower according to your own judgment. Don't worry about getting base scores set exactly; they will adjust themselves over time.

Introducing STAD to Your Class

Before you begin to use STAD in your class, you will need to have ready the following materials:

1. Your lesson plan for Unit 1 (your first lesson).
2. Worksheets and answer sheets (one copy of each for every two students) for Unit 1.
3. Quiz (one for each student) for Unit 1.
4. Team Summary Sheets filled out with the names of the team members (team name blank).
5. A Quiz Score Sheet, filled out with students' names and initial base scores.

Suggested Schedule for Introducing STAD

Day 1	Day 2	Day 3	Day 4
Teach Lesson 1 (or free day)	Teach Lesson 1	Introduce Team Assignments and Team Practice Session (worksheets)	Team Practice Quiz

Step 1: First Lesson

You will need: Your lesson plan for Unit 1.

On the day you begin to use STAD, teach the first lesson of a new unit. You may use a lecture, a discussion, demonstrations on the chalkboard, or audio-visual aids to introduce the unit. Make sure what you teach is closely matched to the objectives tested by the quiz, and do not spend excessive time on unrelated material. Students must have the sense that they will be held responsible for everything you teach.

The amount of time you spend on introducing the unit is up to you. One full class period should be enough for most units in most classes, but you may take two, three, or even more periods to do the initial teaching if you feel that more time is needed. Remember, though, that students will have opportunities to study the content and practice the skills you introduce, so you need not be exhaustive in your presentation.

Step 2: Introducing Team Assignments and Team Practice

You will need:

- One copy of the worksheet for Unit 1 for every two students.

- One copy of the worksheet answer sheet for Unit 1 for every two students.
- Team Summary Sheets filled out with team members' names (team name blank).

1. *Introduce Teams.* Explain the concept of teams and teamwork to the students. In your introduction, you might say the following:

"For the next several weeks, we are going to use a new way of learning. It is called Student Teams-Achievement Divisions, or STAD. In STAD, you will be working on a team. Being on a team and helping each other will help you learn the material we study in class. You will have worksheets to use in your team practice sessions. To see how well you learn, each of you will take quizzes on the material that I present in class and that you study in your teams. Your quiz score will count toward a team score. The winning teams and the students who contribute the most to their teams' scores will be recognized in a class newsletter.

"Each week you and your teammates will have a chance to work together to practice and help each other get ready to take the quizzes. Today I am going to assign you to teams. Then you will have some time to work together and prepare each other for the quiz that you will take later this week."

2. *Inform Students of Their Team Assignments.*

"Now I will tell you which team you will be on. When I read your name, find your teammates and sit next to them. Then choose a team name. Choose a good one, because you will use it for several weeks."

Read the names of the members of each team and point out a place for the team to assemble. Students should move desks together to face each other or move to common tables. While the teams are deciding on names, pass out two copies of the worksheet and two copies of the worksheet answer sheet for your first lesson to each team. Only two copies are given to each team to emphasize that the worksheets are for team practice, not meant to be filled out and returned. Record the team names chosen by the teams on the Team Summary Sheets.

3. *Introduce Team Practice.* After the team names have been recorded, continue as follows:

"The purpose of the team you are in now is to prepare its members for the quizzes that we will have each week. The quizzes will give you a chance to earn points for your team. Each team will have time to practice together the day before the quiz. The idea of team practice is to give teammates an opportunity to help each other learn so that the whole team can do well on the quizzes."

Make sure that each team has received its worksheets and answer sheets. Then explain to students how they should work together.

"You may practice in your teams however you wish, but I will show you one way of practicing that may help you.

"You have in front of you a worksheet and an answer sheet for this week's unit. Every team should have two worksheets and two answer sheets for the whole team. Find your worksheets and answer sheets."

Allow time for students to find worksheets and answer sheets. Make sure you have everyone's attention before you continue with the following:

"If you look at the worksheet you will see a set of instructions and a list of items. The quiz will have questions like those on the worksheet. Your job as a team will be to make sure every member of your team can do every item on the worksheet. To do this, you can first work in groups of two or three within your teams. You may study the worksheet together, checking yourselves against the answer sheet. You might want to quiz each other on the items; or, if the questions require a lot of figuring, you might work the problems one at a time yourself and then check your answers with your team partner or partners. If your partners make any mistakes, try to help them understand why they made the mistake, as well as learn the correct answer. You may look at each other's work and try to figure out where your teammates made their mistakes so that no one will make that mistake again. In other words, you will be each others' teachers."

If the students are doing problems that take time to work out (as in mathematics, for example), have them divide into groups of two or three within their teams and work the problems together one at a time, checking the answer sheet after each problem is completed and correcting any misconceptions if teammates make mistakes. If the content requires short answers, have the students drill each other in pairs, with one student testing his or her partner and then switching roles to be tested, until both students feel confident in their answers. In either case emphasize the following:

1. No one is finished studying until he or she is sure that every one of his or her *teammates* will make 100% on the quiz.
2. When students have questions, they should try to get answers within their teams before asking the teacher.
3. Teammates should *explain* answers to each other instead of simply checking each other and then just going on.

If there is still time in the period, continue as follows:

"Now you may divide into groups of two or

three within your teams and begin to work with each other on the worksheet items. Use the answer sheets to check your answers. If you don't understand an answer, first discuss it with your teammates, and then you may ask me. The idea is to use the worksheets to learn and to help your teammates learn — you are not finished with your worksheet until you and all your teammates know the material. The quiz on this material will be given tomorrow, so be sure to study well today. Are there any questions?

"Go ahead and form into groups of two or three in your teams and work on your worksheets."

Allow students to work in teams for the remainder of the period. Walk around the room, moving from team to team to see that students are working well together. If you or the students themselves find other effective ways to work together on the problems, feel free to use or encourage that method. However, try to avoid a situation where students just do their problems independently and do not interact with their teammates. Also, make sure that teammates are explaining missed problems to one another rather than just grinding through the worksheets. Remind students that the worksheets are for studying, and that their goal is to be sure that every student on the team can do the problems on his or her own. At the end of this work period, have the teams collect their worksheets and give them to you to keep for the next practice.

Step 3: Continued Team Practice and Quiz
You will need: Team Summary Sheets.
Copies of the worksheet and answer sheet for Unit 1 (from previous practice if used before).
Enough copies of the quiz for each student.

1. *Team Practice.* As students come into class, have them move their desks to get into their teams again. You may need to remind students of their team assignments. If you wish, you may take ten fifteen minutes to review your lesson. Then pass out two copies of the first worksheet and answer sheet to each team. Try to reinforce the idea that the worksheets are study aids, not something that should be filled out and handed in. Let students work in their teams for about half of the period.

One problem that sometimes arises at this point is that of students who study or work for five or ten minutes and then say they are finished. If this happens, remind students that they will soon be taking a quiz in which they will need to know the material. If students claim to know the material, remind them to help those on their teams who do not — the whole team has to do well if they are to be successful as a team. If team members try to do the problems independently, remind them that their teammates are there to help them, and encourage them to check each others' work to try to locate and explain errors.

About ten minutes after the team practice begins, have students work with new partners within their teams. This helps reinforce the idea that it is a *team* effort that is important, rather than just individuals or pairs.

If you have some students who are having substantial difficulty with the subject matter, you may wish to have a resource teacher or aide work with them on the material the class is studying.

2. *Quiz.* If students appear to have done enough studying and there are at least twenty-five minutes until the end of the class period, have students put away all materials and take the quiz. If there is not enough time left, give the quiz during the next period. Make sure you have left enough time for students to complete the quiz. (It should be a "power" test, not a "speed" test.) Have students move their desks apart if possible to minimize the possibility of copying.

You may allow students to check each others' papers; or, if you wish, you may collect the papers and check them yourself. Either way, it is essential that the papers be corrected in time for the next class period. If you allow students to check each others' papers, have them exchange papers with members of other teams; then, read off the correct answers. Have students mark an "X" through the numeral of each incorrect answer and circle the numeral of each correct answer in pen or colored pencil (so the students cannot change each others' answers). Have the checkers put their names on the papers they check. Then have them return the quizzes to their owners (make sure that the owners do not write on them), and have all students pass their quizzes in. You should recheck the answers after school to be sure they were accurately marked. Again, if you check the papers yourself, be sure to do so in time for the next class period.

Figuring Individual and Team Scores

As soon as possible after each quiz, you should figure individual improvement scores and team scores and write a class newsletter (or prepare a class bulletin board) to announce the team scores. If at all possible, the announcement of team scores should be made in the first period after the quiz. This makes the connection between doing well and receiving recognition clear to students, which increases their motivation to do their best.

Improvement Points. The points that students earn for their teams are the difference between

their quiz scores and their base scores. Note that this system is based on thirty-item quizzes, which are used in all of the Johns Hopkins Team Learning materials. If you are using your own quizzes, or are dividing one of the Johns Hopkins quizzes into two or more shorter quizzes, you must adjust scores to equal those of a thirty-item quiz. For example, each item on a ten-item quiz is worth three points, each item on a fifteen-item quiz is worth two points, and each item on a twenty-item quiz is worth 1½ points. Appendix 1 transforms scores for quizzes with 8, 10, 12, 15, 20, and 25 items to have scores comparable to a thirty-item quiz. Students can earn a maximum of ten improvement points, and they receive the ten-point maximum if they get a perfect paper, regardless of their base score. The purpose of the maximum is to avoid putting an unfair ceiling on the possible scores of high-performing students. The minimum number of improvement points which students can earn is zero (even if their quiz scores are below their base). Thus, a column of the Quiz Score Sheet could be filled out as follows:

Figure 2. Example of Base Scores and Improvement Points

Date: October 25

Quiz: Adding two digits without renaming

Student	Base Score	Quiz Score	Improvement Points
John	16	23	7
Mary	18	30	10
Tanya	23	30	10
Sam	16	27	10
Cheryl	17	17	0
Jose	21	23	2
Frank	18	17	0

Note that the improvement points are simply the difference between the quiz score and the base score, with a few exceptions. Mary and Sam would have earned more than ten improvement points, but there is a maximum of ten. Frank did not even make his base score, but he does not get negative improvement points — just zero. Figuring improvement points is not at all difficult, and when you get used to it, it will take only a few minutes. The purpose of base scores and improvement points is to make it possible for all students to bring maximum points to their teams, whatever their level of past performance. Students understand that it is fair that each student should be compared to his or her own level of past performance, as all students enter class with different levels of skills and experience in the subject.

Put the points you have calculated on each student's quiz as follows: Base Score = 18; Quiz Score = 23; Improvement Points = 5.

Team Scores. To figure team scores, put each student's improvement points on the appropriate Team Summary Sheet. If there are *four* team members, simply add up the individual improvement points to get team scores, but if there are teams with two, three or five students who took the quiz, use Appendix 2 to prorate their total team scores to be comparable to those of the four-member teams. For example, if a five-member team had a total score of 25, its transformed score would be 20. Only the transformed score should be considered in determining the team standing and computing the cumulative score. Figure 3 shows two STAD team score sheets. Note that in the team with four members (The Fantastic Four) the scores are simply added to find the total team score; in the five-member team (The Five Alive), the score was prorated using Appendix 2.

Recognizing Team Accomplishments

Newsletters. As soon as you have calculated points for each student and figured team scores, write a newsletter to recognize successful teams. Figure 4 shows a sample STAD newsletter. Note that the score of the five-member Five Alive team is represented with the total score, a slash, and the transformed score. You can write the newsletter on one ditto master and run off class copies. In the newsletter, emphasize *team* success as much as possible. You may mention students who got maximum scores (ten points), but when you do, always mention the teams they came from. It is important to help students value team success. Your own enthusiasm about team scores will help. If you give more than one quiz in a week, combine the quiz results into a single weekly newsletter report.

Figure 3. Examples of STAD Team Scores

TEAM SUMMARY SHEET

Team Name Fantastic Four

Team Members	1	2	3	4	5	6	7	8	9	10
Frank	8	10	8							
Otis	10	7	6							
Ursula	0	3	10							
Rebecca	7	10	10							
Total Team Score	25	30	34							
Transformed Team Score	—	—	—							
Team Standing This Week	2	1	2							
Cumulative Score	25	55	89							
Cumulative Standing	2	1	1							

TEAM SUMMARY SHEET

Team Name The Five Alive

Team Members	1	2	3	4	5	6	7	8	9	10
Carlos	10	6	10							
Irene	6	1	4							
Nancy	10	10	6							
Charles	4	5	10							
Oliver	0	4	7							
Total Team Score	30	25	37							
Transformed Team Score	24	20	30							
Team Standing This Week	5	7	5							
Cumulative Score	24	44	74							
Cumulative Standing	5	6	5							

Bulletin Boards. Bulletin boards may be used instead of or in addition to newsletters to recognize team success. Many teachers write the names of the teams on strips of construction paper or poster-board and display them in order of their team standings on the last quiz. There are many variants of this. One teacher put the team names on kites and arranged them so that the highest team was on the highest kite, while another put the team names on pictures of flowers and had the height of the flower represent the team standing.

Rewards Other than Newsletters or Bulletin Boards. The amount and kind of reward you give for team success will help determine the success of STAD, but different amounts or kinds are needed in different classes. In many schools, especially ones with many students with motivation problems, it may be crucial to give the winning teams something more than (or instead of) the newsletter. For the top three teams, this could be refreshments; free time during class to play quiet board games or read; ribbons or trophies; permission to line up first for recess or to go to the next class; or anything else you can think of that is inexpensive but would be valued by your students. The rewards do not have to be large to be quite important in convincing the students that you really do value team success, although your own attitude toward cooperation and team success will be more important than any amount of team reward.

Figure 4. Sample STAD Newsletter

THE LITTLE BRAIN

SPOTSYLVANIA ELEMENTARY SCHOOL

Issue No. 5
March 21, 1981

CALCULATORS OUTFIGURE CLASS!

The Calculators (Charlene, Alfredo, Laura, and Carl) calculated their way into first place this week, with big ten-point scores by Charlene, Alfredo, and Carl, and a near-perfect team score of 38! Their score jumped them from sixth to third in cumulative rank. Way to go Calcs! The Fantastic Four (Frank, Otis, Ursula, and Rebecca) also did a fantastic job, with Ursula and Rebecca turning in ten-pointers, but the Tigers (Cissy, Lindsay, Arthur, and Willy) clawed their way from last place last week to a tie with the red-hot Four, who were second the first week, and first last week. The Fantastic Four stayed in first place in cumulative rank. The Tigers were helped out by ten-point scores from Lindsay and Arthur. The Math Monsters (Gary, Helen, Octavia, Ulysses, and Luis) held on to fourth place this week, but due to their big first-place score in the first week they're still in second place in overall rank. Helen and Luis got ten points to help the M.M.'s. Just behind the Math Monsters were the Five Alive (Carlos, Irene, Nancy, Charles, and Oliver), with ten point scores by Carlos and Charles, and then in order the Little Professors, Fractions, and Brains. Susan turned in ten points for the L.P.'s as did Linda for the Brains.

This Week's Rank	This Week's Score	Overall Score	Overall Rank
1st - Calculators	38	81	3
2nd - Fantastic Four	35	89	1
2nd - Tigers (Tie)	35	73	6
4th - Math Monsters	40/32	85	2
5th - Five Alive	37/30	74	5
6th - Little Professors	26	70	8
7th - Fractions	23	78	4
8th - Brains	22	71	7

TEN POINT SCORERS

Charlene	(Calculators)	Helen	(Math Monsters)
Alfredo	(Calculators)	Luis	(Math Monsters)
Carl	(Calculators)	Carlos	(Five Alive)
Ursula	(Fantastic Four)	Charles	(Five Alive)
Rebecca	(Fantastic Four)	Susan	(Little Professors)
Lindsay	(Tigers)	Linda	(Brains)
Arthur	(Tigers)		

★ ★ ★ ★ ★

Returning the First Set of Quizzes

When you return the first set of quizzes (with the base scores, quiz scores, and improvement points) to the students, you will need to explain the improvement point system. In your explanation, emphasize the following:

1. The main purpose of the improvement point system is to give everyone a minimum score to try to beat and to set that minimum score based on past performance so that all students will have an equal chance to be successful if they do their best academically.
2. The second purpose of the improvement point system is to make students realize that the scores of everyone on their team are important — that all members of the team can earn maximum improvement points if they do their best.
3. The improvement point system is fair because everyone is competing only with himself or herself — trying to improve his or her own performance — regardless of what the rest of the class does.

Weekly Schedule after the First Week

After you return the first quizzes and newsletters and discuss the improvement point system, you may begin the next unit. Following the introductory week, you may use a schedule like this:

1. Teach lesson (one or more periods)
2. Team practice (one or more periods)
3. Team practice/quiz (one period)

Of course, you may take more or less time for each of these activities as you see fit. That is, you might take less than one period to teach a review lesson, or more than one quiz period if you feel it is needed for a long quiz. Following this schedule, you could teach two STAD units per week, or you could intersperse STAD with other activities. For example, many English teachers use STAD two or three periods each week to teach language mechanics, and use the other two or three periods for composition, literature study, and so on.

Recomputing Base Scores after Two Quizzes

The initial assignment of base scores is just a beginning point. After the first two quizzes, you will need to use Appendix 3 to determine what each student's new base score will be. To do this, you should add each student's two quiz scores, and find the total score on the left side of the table. Then find the old base score at the top of the table. Follow the row across and the column down until you come to where they intersect. This will be the student's new base score. For example, suppose a student had a base of 18 and quiz scores of 23 and 28. The student's total score would thus be 23 + 28 = 51. Looking at Appendix 3, you would find the number 51 on the left side of the table. You would find the old base (18) along the top of the table. At the intersection of this row and column, you will find the number 20, which would be the student's new base score. If a student misses a quiz, double the one quiz score that is available and then use the table in the same way. If the student has missed both quizzes, give the student the old base score again. If you give a student a zero for skipping class or for some disciplinary reason, be sure to count it as a missed quiz for the purpose of assigning base scores.

Students should know their own base scores, but not those of other students. Whenever you tell students their base scores, do so on a returned quiz or in some other private way.

Changing Teams

After five or six weeks of STAD, reassign students to new teams. This gives students who were on low-scoring teams a new chance, allows students to work with other classmates, and keeps the program fresh.

Grading

When it comes time to give students report card grades, the grades should be based on the students' actual quiz scores, not their improvement points or team scores. If you wish, you might make the students' improvement points and/or team scores a small part of their grades; or, if your school gives separate grades for effort, you might use these scores to determine the effort grades.

Overview

TGT is the same as STAD in every respect but one: instead of the quizzes and the individual improvement score system, TGT uses academic game tournaments, in which students compete as representatives of their teams with members of other teams who are like them in past academic performance. The components of TGT are described below.

Class Presentations. Material in TGT is initially introduced in a class presentation. This is most often a lecture-discussion conducted by the teacher, but could include audio-visual presentations. Class presentations in TGT differ from usual teaching in that they must be clearly focused on the TGT unit. In this way, students realize that they must pay careful attention during the class presentation, because doing so will help them to do well in the tournaments, and their tournament scores determine their team scores.

Teams. Teams are composed of four or five students who represent a cross-section of the class in academic performance, sex, and race or ethnicity. The major function of the team is to prepare its members to do well in the tournaments. After the teacher presents the material, the team meets to study worksheets or other material. The worksheets may be materials obtained from the Johns Hopkins Team Learning Project, or they may be teacher-made. Most often, the study takes the form of students quizzing one another back and forth to be sure that they understand the content, or working problems together and correcting any misconceptions if teammates make mistakes.

The team is the most important feature of TGT. At every point, emphasis is placed on team members doing their best for the team, and on the team doing its best to help its members. The team provides the peer support for academic performance that is important for effects on learning, and the team provides the mutual concern and respect that are important for effects on such outcomes as intergroup relations, self-esteem, and acceptance of mainstreamed students.

Games. The games are composed of simple, course content-relevant questions that students must answer, and are designed to test the knowledge gained by students from class presentations and during team practice. Games are played at tables of three students, each of whom represents a different team. Most games are simply numbered questions on a ditto sheet. A student picks a number card and attempts to answer the question that corresponds to the number. A challenge rule permits players to challenge each other's answers.

Tournaments. The tournament is the structure in which the games take place. It is usually held at the end of the week, after the teacher has made a class presentation and the teams have had time to practice with the worksheets. For the first tournaments, students are assigned to tournament tables by the teacher. The top three students in past performance are assigned to Table 1; the next three to Table 2; and so on. This equal competition, like the individual improvement score system in STAD, makes it possible for students of all levels of past performance to contribute maximally to their team scores if they do their best. Figure 5 illustrates the relationship between teams and tournament tables. After the first week, however, students change tables depending on their own performance in the most recent tournament. The winner at each table is "bumped up" to the next higher table (e.g., from Table 6 to Table 5); the second scorer stays at the same table; and the low scorer is "bumped down." In this way, if students have been misassigned at first, they will eventually be moved up or down until they reach their true level of performance.

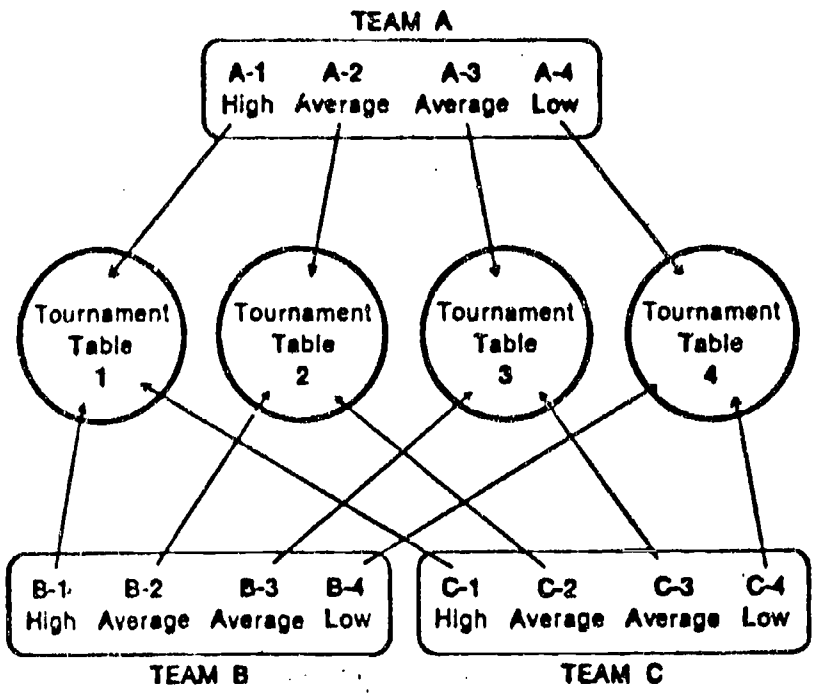
Team Recognition. A newsletter is the primary means of rewarding teams and individual students for their performance. Each week, the teacher prepares a newsletter to announce team scores. The newsletter also recognizes the highest scoring teams and tournament table winners, and reports cumulative team standings. In addition to or instead of the newsletter, many teachers use bulletin boards, special privileges, small prizes, or other rewards to emphasize the idea that doing well as a team is important.

Preparing to Use TGT

Materials. TGT can be used with curriculum materials specifically designed for Student Team Learning and distributed by the Johns Hopkins Team Learning Project, or it can be used with teacher-made materials. As of this writing, Johns Hopkins materials are available in Mathematics for grades two through eight, plus High School Consumer Mathematics, Algebra I, and Geometry; Elementary and Junior High School Language Arts; Elementary and Secondary Nutrition; and Junior High School Life Science and Physical Science. Additional units in Secondary Social Studies and Functional Reading are also in preparation.

However, it is quite easy to make your own materials. Simply make a worksheet, a worksheet answer sheet, a game sheet, and a game answer sheet for each unit you plan to teach. You will also need to make or buy decks of cards numbered from one to thirty. These come with all of the Student Team Learning kits distributed by the

Figure 5. Assignment to Tournament Tables



Johns Hopkins Team Learning Project, or you can make them by putting numbers on index cards. You will need about a dozen sets of number cards (one set for every three students in your largest class). The game sheets usually consist of thirty items, as this is the number of cards provided in the Johns Hopkins Team Learning materials. If you wish to make shorter games, have students remove any cards for which there are no items. See Appendix 4 for instructions for making your own curriculum materials for TGT.

Assigning Students to Teams. Assign students to teams as described in the section on STAD, pp. 16-17. When you rank students to put them on teams, do so on a Tournament Table Assignment Sheet. This form is reproduced in the Appendix and can be copied from there.

Introducing TGT to Your Class

Before you begin to use TGT in your class, you will need to have ready the following materials:

1. Your lesson plan for Unit 1 (your first lesson).
2. Worksheets and answer sheets (one copy of each for every two students) for Unit 1.
3. Gamesheets and game answer sheets (one copy of each for every three students) for Unit 1.
4. Team Summary Sheets filled out with the names of the team members (team name blank).
5. Your list of students ranked from highest to lowest in past performance on a Tournament Table Assignment Sheet.

Step 1: First Lesson

You will need: Your lesson plan for Unit 1.

On the day you begin to use TGT, teach the first lesson of a new unit. You may use a lecture, a discussion, demonstrations on the chalkboard, or audio-visual aids to introduce the unit. Make sure that what you teach is closely matched to the objectives tested by the game, and do not spend excessive time on unrelated material. Students must have the sense that they will be held responsible for everything you teach.

The amount of time you spend on introducing the unit is up to you. One full class period should be enough for most units in most classes, but you may take two, three, or even more periods to do the initial teaching if you feel that more time is needed. Remember, though, that students will have opportunities to study the content and practice the skills you introduce, so you need not be exhaustive in your presentation.

Step 2: Introducing Team Assignments and Team Practice

You will need: One copy of the worksheet for Unit 1 for every two students.
One copy of the worksheet answer sheet for Unit 1 for every two students.
Team Summary Sheets filled out with team members' names (team name blank).

Suggested Schedule for Introducing TGT

Day 1	Day 2	Day 3	Day 4	Day 5
Teach Lesson 1 (or free day)	Teach Lesson 1	Introduce Team Assignments and Team Practice Session (worksheets)	Team Practice	Tournament

1. *Introduce Teams.* Explain the concept of teams and teamwork to the students. In your introduction, you might say the following:

"For the next several weeks, we are going to use a new way of learning. It is called 'TGT,' which stands for Teams-Games-Tournaments. In TGT, you will be working on a team. Being on a team and helping each other will help you learn the material we study in class. You will have worksheets to use in your team practice sessions. To see how well you learn, each of you will be playing in a game tournament every week. The games will contain items based on the material that I present in class and that you study in your teams. In these tournaments you represent your team and earn points for your team. The winning teams and the students who contribute the most to their teams' scores will be recognized in a class newsletter.

"Each week you and your teammates will have a chance to work together to practice and help each other get ready for the tournament. Today I am going to assign you to teams. Then you will have some time to work together and prepare each other for the tournament which we will have later this week."

2. *Inform Students of Their Team Assignments.*

"Now I will tell you which team you will be on. When I read your name, find your teammates and sit next to them. Then choose a team name. Choose a good one, because you will use it for several weeks."

Read the names of the members of each team and point out a place for the team to assemble. Students should move desks together to face each other or move to common tables. While the teams are deciding on names, pass out two copies of the worksheet and two copies of the worksheet answer sheet for your first lesson to each team. Only two copies are given to each team to emphasize that the worksheets are for team practice, not meant to be filled out and returned. Record the team names chosen by the teams on the Team Summary Sheets.

3. *Introduce Team Practice.* After the team names have been recorded, continue as follows:

"The purpose of the team you are in now is to prepare its members for a tournament that we will have each week. The tournament will give you a chance to earn points for your team. Each team will have time to practice together the day before the tournament. The idea of team practice is to give teammates an opportunity to help each other learn so that the whole team can do well in the tournament."

Make sure that each team has located its worksheets and answer sheets. Then explain to students how they should work together.

"You may practice in your teams however you wish, but I will show you one way of practicing that may help you.

"You have in front of you a worksheet and an answer sheet for this week's unit. Every team should have two worksheets and two answer sheets for the whole team. Find your worksheets and answer sheets."

Allow time for students to find worksheets and answer sheets. Make sure you have everyone's attention before you continue with the following:

"If you look at the worksheet you will see a set of instructions and a list of items. The games in the tournament will have questions like those on the worksheet. Your job as a team will be to make sure every member of your team can do every item on the worksheet. To do this, you can first work in groups of two or three within your teams. You may study the worksheet together, checking yourselves against the answer sheet. You might want to quiz each other on the items; or, if the questions require a lot of figuring, you might work the problems one at a time yourself and then check your answers with your team partner or partners. If your partners make any mistakes, try to help them understand why they made the mistake, as well as learn the correct answer. You may look at each others' work and try to figure out where your teammates made their mistakes so that no one will make that mistake again. In other words, you will be each others' teachers."

If the material consists of problems that take time to work out (as in mathematics for example), the students should divide into groups of two or three within their teams and work the problems together one at a time, checking the answer sheet after each problem is completed and correcting any misconceptions if teammates make mistakes. If the material consists of short-answer questions, students should take turns quizzing each other back and forth until they feel confident in their answers. In either case, emphasize the following:

1. No one is finished studying until he or she is sure that every one of his or her *teammates* has mastered the material.
2. When students have questions, they should try to get answers within the team before asking the teacher.
3. Teammates should *explain* answers to each other instead of simply checking each other and then just going on.

If there is still time in the period, continue as follows:

"Now you may divide into groups of two or three within your teams and begin to quiz each other on the worksheet items. Use the answer

sheets to check your answers. If you don't understand an answer, first discuss it with your teammates, and then you may ask me. The idea is to use the worksheets to learn and to help your teammates learn—you are not finished with your worksheets until you and all of your teammates know the material. The tournament on this material will be held soon, so be sure to study well today. Are there any questions? . . . Go ahead and form into groups of two or three in your teams and practice with your worksheets."

Allow students to work in teams for the remainder of the period. Walk around the room, moving from team to team, to see that students are working well together. If you or the students themselves find other effective ways to work together on the problems, feel free to use or encourage that method. However, try to avoid a situation where students just do their problems independently and do not interact with their teammates. Also, make sure that teammates are explaining missed problems to one another rather than just grinding through the worksheets. Remind students that the worksheets are for studying, and that their goal is to be sure that every student on the team can do the problems on his or her own. At the end of this work period have the teams collect their worksheets and give them to you to keep for the next practice session.

Step 3: Continued Team Practice

You will need: Team Summary Sheets
Copies of the worksheet and answer sheet for Unit 1 (from previous practice if used before).

As students come into class, have them move their desks to get into their teams again. You may need to remind students of their team assignments. If you wish, you may take ten or fifteen minutes to review your lesson. Then pass out two copies of the first worksheet and answer sheet to each team. Try to reinforce the idea that the worksheets are study aids, not something that should be filled out and handed in. Let students work in their teams for the rest of the period.

One problem that sometimes arises at this point is that of students who study for five or ten minutes and then say they are finished. If this happens, remind students that they will soon be playing in a tournament in which they will need to know the material. If students claim to know the material, remind them to help those on their teams who do not—the whole team has to do well if they are to be successful as a team. If team members try to do the problems independently, remind them that their teammates are there to help them, and encourage them to check each others' work to try to locate and explain errors.

About ten minutes after the team practice begins, have students work with new partners within their teams. This helps reinforce the idea that it is a *team* effort that is important, rather than just individuals or pairs.

If you have some students who are having substantial difficulty with the subject matter, you may wish to have a resource teacher or aide work with them on the material the class is studying.

Step 4: Introducing the Tournaments

You will need: One copy of a game sheet, game answer sheet, Game Score Sheet (reproduced from the Appendix) and one deck of numbered cards for every three students.
Your Tournament Table Assignment Sheet, with the students listed from highest to lowest in past academic performance.

Before you begin count the number of students in your class. If the number is evenly divisible by three you will have all three-person tournament tables. If there is one student left over when you divide by three, make the highest table a four-person table; if two, make the two highest tables four-person tables. In the column marked "Tournament Number 1" on the Tournament Table Assignment Sheet, put a "1" for the first three students on the list, a "2" for the second three, and so on until all the students are assigned. Avoid putting two students from the same team at the same tournament table. If two teammates would be at the same table, switch one with a student from the next higher or lower table.

Also before you begin, you should play the TGT game with friends to familiarize yourself with the rules. The rules are much easier to learn if you actually experience them! Whether you play the game yourself or not, make absolutely sure that you completely understand the game rules before you start.

1. *Introduce the Tournament.* In introducing your students to the tournament, you might say the following:

"Yesterday you all worked in your teams to learn the material we have been studying. Today you will get your chance to show how much you learned in your teams. Each of you will play a game in competition with other students who have done about as well as you have in this subject in the past. Any points you win in the game will be points for your team.

"In a moment I will assign you to tables to play the game. You will play against different players each week, although your team will always

remain the same. Each of you should have a good chance to win at your table, because the competition will always be fair.

"After today's tournament, you will all receive a class newsletter that will announce the winning teams and the students who contributed the most to their teams' scores. Do your best in the games, because your team is rooting for you!"

2. *Assign Students to Tables.* To avoid emphasizing your students' ranks, do not read the table assignments in order. Give each table a deck of numbered cards, a game sheet, a game answer sheet, and a Game Score Sheet.

3. *Introduce the Game.* Explain the purpose and the rules of the game. In explaining the rules, you should ask one table (three students) to come to the front of the class to demonstrate what the players do at each step of the game. The game rules are illustrated in Figure 6.

Figure 6. Game Rules

Reader

1. Picks a numbered card and finds the corresponding question on the game sheet.
2. Reads the question out loud.
3. Tries to answer.

1st Challenger

Challenges if he or she wants to (and gives a different answer), or passes.

2nd Challenger

Challenges if 1st challenger passes, if he or she wants to. When all have challenged or passed, 2nd challenger checks the answer sheet. Whoever was *right* keeps the card. If the *reader* was wrong, there is no penalty, but if either challenger was wrong, he or she must put a previously won card, if any, back in the deck.

To start the game, the students draw cards to see who is the first reader. The student with the highest number goes first. Play proceeds in a clockwise direction from the first reader.

When the game begins, the reader shuffles the cards and picks the top one. He or she then reads the question corresponding to the number on the card out loud, including the possible answers if the question is multiple choice. For example, if the student picks card number 21, he or she answers question number 21. The reader is allowed to guess without penalty if he or she isn't sure about the answer. If the content of the game involves math problems, all students (not just the reader) should work the problems so they will be ready to challenge. After the reader has given an answer, the student to his or her left (first challenger) has the option of challenging, and giving a different answer. If he or she passes, or if the second challenger has an answer that is different from the first two, the second challenger may challenge. Challengers have to be careful, though, because they lose a card (if they have one) if they are wrong. When everyone has answered, challenged, or passed, the second challenger checks the answer sheet and reads the right answer aloud. Whoever is right gets to keep the card. If either challenger is wrong, he or she must put a previously won card (if any) back in the deck. If no one is right, the card goes back in the deck.

For the next round, everything moves one position to the left—the first challenger becomes the reader, the second challenger becomes the first challenger, and the reader becomes the second challenger. Play continues until the period ends or the deck is exhausted. When the game is over, players record the number of cards they won on the Game Score Sheet in the column marked "Game 1." If there is still time, students should reshuffle the deck and play a second game until the end of the period, putting the number of cards won in that game under "Game 2."

4. *Play the Game.* All the students should play the game at the same time. While they are playing, move from group to group to answer questions and be sure that everyone understands the game procedures. Ten minutes before the end of the period, call "time" and have students stop and count their cards. They should then fill in their names and scores on the Game Score Sheet, as in Figure 7.

5. *Calculate Game Scores and Tournament Points.* Have students add up the scores they earned in each game (if they played more than one) and fill in their day's total. If you have young children (fourth grade or below), simply collect the score sheets. If your students are older, you may have them calculate their *tournament points.* Tournament points for all possible outcomes are summarized in Figure 8. In general, have students give the top scorer six points, the second scorer four points, and the third scorer two points at a three-person table with no ties. If there are more or less than three players or if there are any ties, use Figure 8 to tell students what to do. When everyone has calculated his or her *tournament points,* have a student collect the Game Score Sheets. While he or she is doing so, you may take

Figure 7. Sample Game Score Sheet

TABLE # ____ GAME SCORE SHEET (TGT) ROUND # ____

Player	Team	Game 1	Game 2	Game 3	Day's Total	Tournament Points
ERIC	GIANTS	5	7		12	2
LISA A.	GENIUSES	14	10		24	6
DARRYL	B. BOMBS	11	12		23	4

Figure 8. Calculating Tournament Points

FOR A FOUR-PLAYER GAME

Player	No Ties	Tie For Top	Tie For Middle	Tie For Low	3-Way Tie For Top	3-Way Tie For Low	4-Way Tie	Tie For Low and High
Top Scorer	6 points	5	6	6	5	6	4	5
High Middle Scorer	4 points	5	4	4	5	3	4	5
Low Middle Scorer	3 points	3	4	3	5	3	4	3
Low Scorer	2 points	2	2	3	2	3	4	3

FOR A THREE-PLAYER GAME

Player	No Ties	Tie For Top Score	Tie For Low Score	3-Way Tie
Top Scorer	6 points	5	6	4
Middle Scorer	4 points	5	3	4
Low Scorer.	2 points	2	3	4

FOR A TWO-PLAYER GAME

Player	No Ties	Tied
Top Scorer	6 points	4
Low Scorer	2 points	4

Figure 9. Sample Team Summary Sheet

Team Name GENIUSES

Team Members	1	2	3	4	5	6	7	8	9	10
MARK	6	2	2.	4						
KEVIN	4	4	2	6						
LISA A.	5	2	4	6						
JOHN F.	6	6	2	4						
DEWANDA	4	4	6	2						
Total Team Score	25	18	16	22						
Transformed Team Score	20	14	13	18						
Team Standing This Week	1	3	5	3						
Cumulative Score	20	34	47	65						
Cumulative Standing	1	1	2	2						

final questions or comments, and then dismiss the class.

Figuring Team Scores

As soon as possible after the tournament, you should figure team scores and write the class newsletter to announce the standings. To do this, first check the *tournament points* on the Game Score Sheets. Then, simply transfer each student's tournament points to the Team Summary Sheet for his or her team, and add up all the team members' scores. If the team has four members, you are finished. However, if the team has more or less members than four, you will need to transform the scores to be fair in comparing team scores. Appendix 2 gives transformed scores for all possible team sizes and number of points. For example, if a five-member team receives a total score of 22, the team will receive a transformed score of 18. Only the transformed scores for three- or five-member teams should be considered in determining the team rank. The cumulative score the team has made to date is also recorded on the Team Summary Sheet. Of course, it is the transformed scores that are used to get the cumulative score.

Figure 9 shows how scores are recorded and totaled for one team. Note that because this team has five members, the total team scores have been transformed to be comparable to the scores of four-member teams.

Bumping — Reassigning Students to Tournament Tables

Bumping, or reassigning students to new tournament tables, must be done after each tournament to get ready for the next tournament. It is easiest to do the bumping at the same time as you figure team scores and write the newsletter. Use a Tournament Table Assignment Sheet for this purpose.

To "bump" students, follow the steps below. A diagram of the bumping procedures is shown in Figure 10, and an example of a completed Tournament Table Assignment Sheet, showing how the bumping procedure might work for a hypothetical class after two tournaments (one tournament per week), is depicted in Figure 11.

1. Use the Game Score Sheets to identify the high and low scorers at each tournament table. On the Tournament Table Assignment Sheet, *circle* the table assignments of all students who were *high scorers* at their tables. If there was a tie for high score at any table, flip a coin to decide which number to circle; do not circle more than one number per table. In Figure 11, Tyrone, Maria, Tom, Carla, and Ralph were table winners in the first tournament, so their table numbers are circled in the first column; Tyrone, Liz, John T., Tanya, and Ruth were winners in the second tournament, so their numbers are circled in the second column.

2. *Underline* the table numbers of students who were *low scorers*. Again, if there was a tie for low score at any table, flip a coin to decide which to underline; do not underline more than one number per table. In Figure 11, Sarah, John T., John F., Kim, and Shirley were low scorers at their respective tables in the first tournament; Sam, Sylvia, Tom, John F., and Kim were low scorers in the second tournament.

3. Leave all other table assignments as they were, including numbers for absent students.

4. In the column for the next tournament, transfer the numbers as follows:

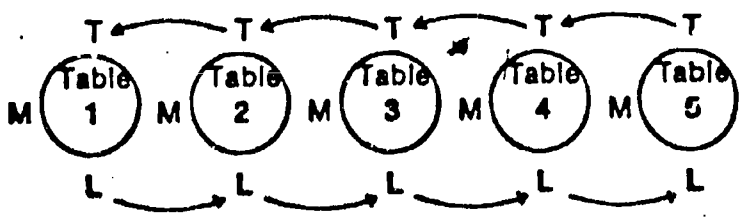
If a number is *circled, reduce* it by one (④ becomes 3). This means that the winner at Table 4 will compete at Table 3 next week, a table where the competition will be more difficult. The only exception is that ① remains 1, because Table 1 is the highest table. If the number is *underlined, increase* it by one (4 becomes 5), except at the lowest table, where the low scorer stays at the same table (e.g., 10 remains 10). This means that the low scorer at each table will compete next week at a table where the competition will be less difficult. If the number is *neither underlined nor circled*, do not change it for the next tournament — transfer the same number.

In Figure 11, note that Tom won at Table 3 in the first tournament and was bumped up to Table 2. At Table 2 he was the low scorer, so for the third week's tournament he will compete at Table 3 again. Sylvia was the middle scorer at Table 3 in the first tournament, so she stayed at Table 3; then she lost in the second tournament and is moved to Table 4.

5. Count the number of students assigned to each table for next week's tournament. Most tables should have three students; as many as two may have four. If table assignments do not come out this way, make some changes in table assignments so that they do.

Figure 10. Tournament Bumping Procedures

T = Top Scorer M = Middle Scorer L = Low Scorer



Note that in Figure 11, Tyrone won at Table 1 twice, but did not change tables because there was no place to go higher than Table 1. Shirley and

Figure 11. Sample Tournament Table Assignment Sheet with Bumping

(Five Tournament Tables)

TOURNAMENT TABLE ASSIGNMENT SHEET (TGT)

Tournament Number:

Student	Team	1	2	3	4	5	6	7	8	9	10	11	12	13
SAM	Orioles	1	1	2										
SARAH	Cougars	1	2	2										
TYRONE	Whiz Kids	①	①	1										
MARIA	Geniuses	②	1	1										
LIZ	Orioles	2	②	1										
JOHN T.	Cougars	2	③	2										
SYLVIA	Whiz Kids	3	3	4										
TOM	Geniuses	③	2	3										
JOHN F.	Orioles	3	4	5										
TANYA	Whiz Kids	4	④	3										
CARLA	Orioles	④	3	3										
KIM	Cougars	4	5	5										
CARLOS	Geniuses	4	4	4										
SHIRLEY	Whiz Kids	5	5	5										
RALPH	Cougars	⑤	4	4										
RUTH	Geniuses	5	⑤	4										

Note:
① indicates *high* scorer at Table 3
2 indicates *middle* scorer at Table 3
3 indicates *low* scorer at Table 3

Results of Most Recent Tournament ↑

↑ Tournament Table Assignment for Next Tournament

Kim lost at Table 5, but were not "bumped down" because Table 5 is the lowest table.

Recognizing Team Accomplishments

The motivational force that TGT generates is greatly enhanced when public announcements, bulletin board displays, and newsletters are used to publicize the tournament results and indicate their importance. Of the three, the newsletter is perhaps the most effective in creating a sense of excitement regarding the tournament and the students' performance.

The newsletter is also easy to produce. It can be written or typed on a ditto master and then run off and distributed to each student. It is best to have the newsletter out as soon as possible after each tournament.

When the Team Summary Sheet are completed (see Figure 9), it is easy to transfer the information for the last recorded tournament into the newsletter format. The Team Summary Sheets contain columns for several tournaments. After the sheets are completed, it is simply a matter of sorting them, once to rank the team scores for the latest tournament from highest to lowest, and once to rank the cumulative team scores. Then transfer the information to the newsletter.

Figure 12 depicts a sample TGT newsletter. Note that while team success is emphasized in the TGT newsletter, table winners are also recognized, along with the teams they came from. Rewards for winning teams such as refreshments, free time, or special privileges, may be added to the newsletter recognition to make team success more important to students. See p. 21 for a discussion of such additional rewards.

Weekly Schedule after the First Week

After you pass out the first newsletters, you may begin the next unit. Following the introductory week, you may use a schedule like this:

1. Teach lesson (one or more periods)
2. Team practice (one or more periods)
3. Tournament (one period)

Of course, you may take more or less time for each of these activities as you see fit. For example, you might take less than one period to introduce a review lesson. Most teachers go through one cycle of teach-practice-tournament per week, with the tournament falling on a Friday. If they take one period for the lesson and one for team practice, this leaves two periods per week for other activities. Many teachers use TGT for part of the week to teach skills (such as language mechanics, math operations, basic science knowledge, geography) and use the rest of the week for activities that do not lend themselves to the single right-answer format of TGT (e.g., compositions, math or science labs, discussion groups). Other Student Team Learning methods described in this manual may be used for these other purposes, or you may teach them as you see fit. On the other hand, some teachers use TGT intensively, and may hold as many as two tournaments per week.

Changing Teams

After five or six weeks of TGT, assign students to new teams.

Grading

TGT does not automatically produce scores that can be used to compute individual grades. If this is a serious problem, you might use STA: nstead of TGT. To determine individual grades, many teachers using TGT give a midterm and a final test each semester; some give a quiz after each tournament. You should base the students' grades on quiz scores or other individual assessments, not on tournament points or team scores. If you wish, you might make the students' tournament points and/or team scores a small part of their grades; or, if your school gives separate grades for effort, you might use these scores to determine the effort grades.

Figure 12. Sample TGT Newsletter

The Weekly Planet

4th Week March 28

FLASH! Fantastic Four Sweeps Language Arts Tournament! .

The Fantastic Four was the winning team this week with a total of 22 points. John T., Kris, and Alvin put in outstanding performances for the Four, each contributing six points to their team. Their victory brings the Four to second place in the National League standings, only six points behind the leading Giants!

Hot on the heels of the Fantastic Four were the Brain Busters with 21 points. Anita and Tanya helped the team out with victories at their tables, while Peter tied for first at his. The Brain Busters are still in third place in National League competition, but are moving up fast!

Third this week were the American League Geniuses with 18 points. They were helped out by Kevin and Lisa A., both table winners. Other table winners were Lisa P. of the Daredevils and Mike of the Grammar Haters.

THIS WEEK'S SCORES

1ST--Fantastic Four		2ND--Brain Busters		3RD--Geniuses	
John T.	6	Anita	6	Mark	4
Mary	4	Peter	5	Kevin	6
Kris	6	Darryl	4	Lisa A.	6
Alvin	6	Tanya	6	John F.	4
	22		21	Dewanda	2
					22/18

Daredevils		Giants		Chipmunks		Grammar Haters	
Lisa P.	6	Robert	4	Caroline	5	Sarah	2
Henry	2	Eric	2	Jerry	2	Willy	2
Cindi	4	Sharon	2	Charlene	3	Mike	6
Fred	4	Sylvia	4	James	2	Theresa	3
						John H.	2
	16		12		12		15/12

SEASON'S STANDING FOURTH WEEK

National League		American League	
TEAM	SEASON SCORE	TEAM	SEASON SCORE
Giants	78	Grammar Haters	74
Fantastic Four	72	Geniuses	65
Brain Busters	66	Daredevils	57
Chipmunks	59		

Overview

Jigsaw is a technique developed by Elliot Aronson and his associates at the University of Texas and the University of California at Santa Cruz. This section presents Jigsaw II, a modification of Jigsaw that is most often used as part of Student Team Learning. Jigsaw II is a relatively simple technique, designed to increase students' sense of responsibility for their learning by making each one an "expert" on one part of an instructional unit, and then having each student teach the part on which he or she is an expert to the others on his or her team. Original Jigsaw is described at the end of this section.

Jigsaw II can be used whenever the material to be studied is in written narrative form. It is most appropriate in such subjects as social studies, literature, some parts of science, and related areas in which concepts rather than skills are the learning goals. The basic "raw material" for Jigsaw II should usually be a chapter, story, biography, or similar narrative or descriptive material.

In Jigsaw II, students work in heterogeneous teams as in STAD and TGT. The students are assigned chapters or other units to read, and are given "Expert Sheets" which contain different topics for each team member to focus on as he or she reads. When everyone has finished reading, students from different teams who had the same topics meet to discuss their topics in an "expert group" for about thirty minutes. The experts then return to their teams and take turns teaching their teammates about their topics. Finally, all of the team members take a quiz that covers all of the topics, and the quiz score becomes a team score as in STAD. Also as in STAD, the scores which students contribute to their teams are based on the individual improvement score system, and high scoring teams and individuals are recognized in a newsletter or bulletin board. Thus, students are motivated to study the material well and to work hard in their expert groups so that they can help their team do well. The key to Jigsaw is interdependence — every student depends on his or her teammates to provide the information necessary to do well on the quizzes.

Preparing to Use Jigsaw II

Materials. Before you begin, you need to make an Expert Sheet and a quiz for each unit of material. At present, there are no Johns Hopkins Team Learning Project materials for Jigsaw, but preparing your own materials is not difficult. An example of a complete Jigsaw II unit is presented in Appendix 5.

To make your materials, follow these steps:

1. Select several chapters, stories, or other units that each cover the amount of material you would like to cover in a two- to three-day unit. If you plan to have students read in class, the selections should not require more than a half hour to read; if you plan to assign the reading for homework, they can be longer.

2. Make an Expert Sheet for each unit. An Expert Sheet tells students what they should concentrate on while they read, and tells them which expert group they will work with. It identifies four topics that are central to the unit. For example, an Expert Sheet for the Level Four Harcourt-Brace social studies book might refer to a section on the Blackfoot Indian tribes that is used to illustrate a number of concepts about groups, group norms, leadership, and so on. The Expert Sheet for that section could be as follows:

> **Expert Sheet**
>
> "The Blackfoot"
>
> To read: Pages 3-9 and 11-12.
> Topics:
>
> 1. How were Blackfoot men expected to act?
> 2. What is a group and what does it do? What were the most important groups for the Blackfoot?
> 3. What did Blackfoot bands and clubs do?
> 4. What were the Blackfoot customs and traditions?

As much as possible, the topics should cover themes that appear throughout the chapter, instead of issues that appear only once. For example, if the class were reading *Tom Sawyer*, a good topic might be "How did Tom feel about his community?", which appears throughout the book, as opposed to "What happened to Tom and Huck Finn when they ran away?", which a student could learn by reading only a section of the book. Also see the example of topics based on the Introduction to this manual in Appendix 5.

3. Make a quiz for each unit. The quiz should consist of at least eight questions, two for each topic, or some multiple of four so that there is an equal number of questions for each topic. You may wish to add two or more general questions to make the quiz have an even number of items. The questions should require considerable understanding,

because the students will have had plenty of time to discuss their topics in depth, and easy questions would fail to challenge students who had done a good job in preparation. However, the questions should not be obscure. In the Blackfoot example, the first two questions might be as follows:

> 1A: Which of the following was *not* an expected way of behaving for a Blackfoot man?
>
> A. He was expected to be brave
> B. He was expected to brag about how many of the enemy tribe he had touched
> C. He was expected to clean buffalo meat
> D. He was expected to share buffalo meat

> 1B: What are *norms of behavior?*
>
> A. All the ways of acting that people in a group have
> B. The ways people in a group expect themselves and other members of the group to act
> C. Records of great deeds
> D. Sharing food with the very old

All students must answer all questions. The quiz should take no more than ten minutes. If you wish, you may use an activity other than a quiz or in addition to a quiz, as an opportunity for the team members to show their learning. Such an activity might be an oral report, a written report, a crafts project, and so forth. An example of a Jigsaw II quiz appears in Appendix 5.

Assigning Students to Teams. Assign students to four- or five-member heterogeneous teams exactly as in STAD (see pp. 16-17). Put team members' names on Team Summary Sheets, leaving the team name blank.

Determining Initial Base Scores. Rank students on past performance and assign them intial base scores exactly as for STAD (see p. 17). Use a Quiz Score Sheet to record the initial base scores.

Scheduling Jigsaw II Activities. Scheduling of Jigsaw II depends on whether or not you assign the reading as homework, how long it takes students to read the material in class if you do not assign it as homework, and how much time you wish to set aside for the Jigsaw units. The sequence of activities and approximate times required are presented below; you may shorten or lengthen the suggested times to fit your schedule and the time needed for your particular materials.

Sequence of Jigsaw II activities:

1. Pass out Expert Sheets and assign topics (about 5 minutes).
2. Students read material (about 30 minutes).
3. Students meet in expert groups (about 20 minutes).
4. Students return to report to their teams (about 20 minutes).
5. Quiz (about 10 minutes).

Total Time: 85 minutes

One problem with Jigsaw is that if students read in class, some will finish before others and will have to wait for them to catch up. Students who finish early can be asked to go back over the material and take notes. However, a better solution is to have students do their reading at some other time, such as in their reading groups or for homework, so that this does not become a problem. To do this, you would pass out Expert Sheets at the end of the period, have students read at home or in their reading groups, and resume the schedule with the expert groups at the beginning of the next period.

Introducing Jigsaw II to Your Class

Before you begin to use Jigsaw II in your class, you will need to have ready the following materials:

1. Student copies of the reading unit you plan to use (chapter, story, etc.).
2. An Expert Sheet for each student.
3. A quiz for each student.
4. Team Summary Sheets filled out with the names of the team members (team name blank).
5. A Quiz Score Sheet filled out with students' names and initial base scores.

Suggested Schedule for Introducing Jigsaw II

Day 1	Day 2	Day 3
Introduce the Idea of Jigsaw II and Team Assignments	Finish Reading Expert Groups	Experts' Reports to Teams
Pass out Reading Material and Expert Sheets		Quiz
Assign Topics and Begin Reading		

Step 1: Introducing Jigsaw II

You will need:

- A copy of the reading unit for each student.
- An Expert Sheet for each student.
- The Team Summary Sheets filled out with team members' names (team name blank).

1. *Introduce the Idea of Jigsaw II.* To explain Jigsaw II to the students, you might say the following:

"For the next several weeks we are going to be using a new way of learning. It is called Jigsaw. In Jigsaw, you will be working on a team. Being on a team and helping each other will help you learn better about what you read. Each team member will have a special topic to learn about. After you read the material, you will meet with members of other teams who have the same special topic and discuss your topic, and then you will return to your team as an expert to teach your teammates about your topic. Finally, everyone will be quizzed on all of the topics. The topics are like the pieces of a puzzle — each expert will be working to fit in his or her piece so that the whole team can do well on the quiz. Your quiz score will count toward a team score. The winning teams and the student's who contribute the most to their teams' scores will be recognized in a class newsletter."

2. *Inform Students of Their Team Assignments.*

"Now I will tell you which team you will be on. When I read your name, find your teammates and sit next to them. Then choose a team name. Choose a good one, because you will use it for several weeks."

Read the names of the members of each team and point out a place for the team to assemble. Students should move desks together to face each other or move to common tables. Record the team names chosen by the teams on the Team Summary Sheets.

3. *Pass out Reading Material and Expert Sheets.* After the team names have been recorded, pass out the reading material and an Expert Sheet to each student. Then continue as follows:

"As I mentioned before, the idea behind Jigsaw is that each student becomes an expert on a particular topic and then teaches it to his or her teammates. The first step in this process is to get a topic and then to read the material, looking in particular for information about that topic. In a moment, I will come around to assign you to topics. When I do, you may begin reading the pages indicated on your Expert Sheets. Be sure to read carefully, so that you may learn about the material in general and your own topic in particular."

4. *Assign Topics and Begin Reading.* Go from team to team assigning students to topics. Make the assignments randomly; it is not important who gets which topics. As you assign topics, have the students start reading and let them read until the end of the period. You may assign the rest of the reading for homework or have students complete it at another time such as during reading period, or you may wait until the next period to have students finish their reading in class. Remind students to be sure to bring their Expert Sheets back for the next class period.

Step 2: Introducing Expert Groups

You will need:

- A copy of the reading unit for each student.

1. *Finish Reading.* Let the students finish their reading, if they have not done so for homework or during some other time. Ask those who finish early to go back over the material to be sure they understand it.

2. *Introduce Expert Groups.* As soon as almost all students have finished reading, introduce expert groups as follows:

"Now you will all have a chance to discuss your topics with others who have the same topic. In a moment, I will ask everyone who has topic 1 to get together, everyone who has topic 2 to get together, and so on. In these expert groups you will be able to talk about your topic to decide what the most important things are about it. You should share your information so that others will share theirs. I will appoint a leader for each expert group just for today. The leader's job is to get every student in the expert group to help add ideas. Are there any questions?"

Point out a place for each expert group to assemble. If there are more than seven students in one group, divide the group into two groups. Appoint a leader for each group. The leader does not have to be a good student, but should be a student who has the respect of his or her classmates. When the students are in their expert groups, have them start discussing their topics. Encourage them to try to anticipate what might be on the quiz, and recommend that they make lists of what they feel are important answers to the questions asked in the topics. Work with each expert group, one at a time, to help them structure their task and use the time effectively. You may wish to give the expert groups special hints so that they will have truly unique information to bring back to their teams. Also, you may wish to give the expert groups specific discussion points to help focus them on the main ideas in their readings.

Let the students work in their expert groups for the rest of the period.

Step 3: Experts' Reports and Quiz

You will need:

- A copy of the reading unit for each student.
- A copy of the quiz for each student.

1. *Experts' Reports*. Have students return to their teams and report on what they learned in their expert groups. Again, the students should emphasize the main points and anticipate what might be on the quiz in preparing their teammates. If you wish, you may have a class discussion of the material following the experts' reports. If you do, try to draw on the experts in the discussion to emphasize their special skills and knowledge.

2. *Quiz*. At least fifteen minutes before the end of the period, have students put away their materials and take the quiz.

After Step 3

The procedures for Jigsaw II — figuring individual and team scores, recognizing team accomplishments, returning the first set of quizzes, recomputing base scores after two quizzes, changing teams, and grading — are exactly the same as those for STAD. Because they have already been described in detail for STAD (see pp. 19-23), those procedures are not repeated here. The one procedural difference between the two techniques is the weekly schedule after the first week.

After you return the first Jigsaw II quizzes and newsletters and discuss the improvement point system, you may begin the next unit. Following the introductory week, you may use a schedule like this:

1. Pass out reading material and Expert Sheets; assign topics and begin reading (one period)
2. Finish reading/expert groups (one period)
3. Experts' reports to teams/quiz (one period)

Original Jigsaw

Aronson's original Jigsaw resembles Jigsaw II in most respects, but also has some important differences. In the original Jigsaw, students read individual sections that are entirely different from those read by their teammates. This has the benefit of making the experts possessors of completely unique information, and thus makes the teams value each team member's contribution that much more. For example, in a unit on Chile, one student might have information on Chile's economy, another on its geography, a third on its history, etc. To know all about Chile, a student has to rely on his teammates. Original Jigsaw also takes less time than Jigsaw II because the readings are shorter, being only a part of the total unit to be studied.

The most difficult part of original Jigsaw, and the reason that Jigsaw II is presented first in this manual, is that each of the individual sections must be written so that they are comprehensible by themselves. Existing materials cannot be used as in Jigsaw II; books can rarely be divided neatly into sections that make any sense without the other sections. For example, in a biography of Alexander Hamilton, the part that describes his duel with Aaron Burr would assume that the reader knew who both men were (having read the rest of the biography). Preparing an original Jigsaw unit involves rewriting materials to fit the Jigsaw format. Jigsaw II has the added advantage of having all students read all of the material, which may make unified concepts easier to understand.

If you wish to use original Jigsaw to capitalize on its special features that give the experts unique information (which may contribute to Jigsaw's positive effects on students' self-esteem), use Jigsaw II with the following modifications:

1. Write units that present unique information about a subject but make sense by themselves. This can be done by cutting apart texts and adding information as needed, or by writing completely new material.
2. Original Jigsaw uses five- or six-member teams and five topics for each unit.
3. Original Jigsaw uses team leaders, and strongly emphasizes team-building exercises before and during use of the technique. Team-building involves activities that help the teams learn how to work together well and to get to know one another. Part of team-building after the beginning is process analysis, in which team members are asked to analyze the strengths and weaknesses of their operation as a team. Of course, team-building exercises may be used with any of the team techniques.
4. Original Jigsaw uses very few quizzes (if any), and does not use team scores, improvement scores, or newsletters. Students simply receive individual grades.

For more information on original Jigsaw, see *The Jigsaw Classroom* by Elliot Aronson (Beverly Hills, California: Sage Publications, 1978).

Other Ways of Using Jigsaw

Jigsaw is one of the most flexible of the Student Team Learning methods. There are several modifications you can make that keep the basic model but change the details of implementation.

1. Instead of having the topics refer to narrative materials that you give to students, you could have students search a set of materials in the classroom or in the library to find information on their topics.
2. You may have students write essays or give oral reports instead of taking quizzes when they have completed the experts' reports.
3. Instead of having all teams study the same material, each team can be given a unique topic to learn together and subtopics for each team member. The team could then prepare and make an oral presentation to the entire class.

TROUBLE-SHOOTING

As you get into Student Team Learning, there are a few problems that you may experience. Some of these problems and the solutions that teachers have found effective for them are discussed below.

1. **Students in one or more of the teams do not get along.** This problem often comes up in the first week or two of use of Student Team Learning. Remember, a team is made up of the most unlikely combination possible. Students differ from one another in sex, ethnicity, and academic performance level.

The primary solution for this problem is time. Some students will be unhappy about their team assignments initially, but as soon as they realize that they will be working in those teams for a long time, and especially when they get their first team scores and realize that they really are a team and need to cooperate to be successful, they will find a way to get along. This is why it is important not to allow students to change teams; what makes the teammates work on their problems is the recognition that they will be together for many weeks.

However, some students will need constant reminding that their task is to cooperate with their teammates. You must set a firm tone that cooperation with teammates is what is appropriate behavior during team practice. No one should be forced to work with a team; individuals who refuse (this happens rarely) should be allowed to work alone until they are ready to join the team. However, it should be clear to students that putdowns, making fun of teammates, or refusing to help teammates is not a very effective way for teams to be successful and is not acceptable to you.

One effective way to get students to cooperate better is to provide extra rewards to winning teams. Sometimes students will not care how the team or their teammates are doing until they know that the winning team will get refreshments, time-off, release from a test, and so on. Some teachers give the members of the week's winning team an automatic A grade for the week.

It is also a good idea to have students who work in pairs within their teams switch partners every once in a while, to reemphasize that it is a team effort that is needed, not just individual preparation.

If some teams just never work out, you may decide to change teams after three or four weeks instead of waiting for [illegible], and when you reassign the teams, you may [illegible]ake the assignments in ways that avoid the problems you encountered in your first team assignments.

2. **Students are misbehaving.** One way to encourage students to behave appropriately is to give each team up to three additional team points per day based on the team's behavior, cooperativeness, and effort. If you do this, make sure that you also move from team to team and tell the teams what they are doing right (e.g., "I see the Cougars working well together . . . The Fant[illegible]tic Four are all in their seats and doing their work . . . The Chiefs are working quietly.") The points teams earn for their behavior should definitely *not* be a surprise, but should reflect what you were saying during the period.

3. **Students are too noisy.** Noise is more of a problem in some schools than others, depending on acoustics, open vs. traditional construction, and school attitudes toward noise. Student Team Learning does not go well with the teacher shushing students every five minutes, but if things are so noisy that students cannot hear each other, something should be done.

The first solution to try for the noise problem is to bring all activity to a stop, get absolute quiet, and then whisper a reminder to students to speak softly. Students should be taught to stop talking immediately when the lights are flicked off for a moment, or a bell sounds, or at some other signal.

If this does not work, you might try to make noise level part of the criterion for earning extra team points, as noted above. However, this should be done as a last resort, as noise is more often just forgetfulness on the part of students than it is noncompliance, and the extra point system is primarily designed for non-compliance.

If students can hear each other and not get out of hand, you should just learn to tolerate their on-task noise if you can.

4. **Absences.** Student absenteeism can be a major problem in a Student Team Learning class because students depend on one another to contribute points to the team. The solution, however, is relatively simple in classrooms where absenteeism is not extremely high. When students miss a tournament or a quiz, you should prorate the scores for their teams that week, using Appendix 2. For example, if one student on a four-member team was absent for the tournament or quiz, prorate that team's score as if it were a three-member team.

When Student Team Learning is to be used in a class with very poor attendance, poor attenders should be distributed evenly among teams as fifth or sixth members, so that at least three or four students will be likely to show up on each team each day. If there are some students who never or

almost never attend, they may be left out of the team system and reincluded if they start coming to class more regularly.

5. **Students are not using team practice time effectively.** If students do not use their time in team practice effectively, you can impose some kind of structure on the team practice sessions to be sure that time is used well.

One problem is that students may be used to doing their worksheets alone and thinking that they are finished when they get to the end, regardless of whether they or their teammates understand the material. This problem is dealt with primarily by providing only two worksheets per team so that students have to work together. You can also make (or have students make) flashcards with questions on one side and answers on the other, and have students drill each other in pairs or threes, putting items correctly answered in one pile and missed items in another. The students would go through the missed pile until everything has been correctly answered once, and then go through the entire set again until each student can get 100% on the items in any order. This will only work if the answers are short. If the answers require figuring, as in most of mathematics, then students should work in pairs or threes, going through the items one at a time and checking answers after everyone has finished each item. If anyone missed a question, his or her teammates who got it should explain what they did. In either of these cases, students should change partners within their teams every thirty minutes or so, to make sure that teammates do not form little sub-teams.

6. **The range of performance levels in the class is too wide for group instruction.** If you have this problem, it is first important to think about what you were doing before you used Student Team Learning. If you were doing whole-group instruction, you can use Student Team Learning, but you need to take time to work with low performers to help get them up to the level of the rest of the class. If you were using subgrouping, you should use the procedures described for "Student Teams and Individualization" in the section of this manual entitled, "Other Student Team Learning Techniques."

7. **Problems with the TGT tournament.** There are usually few tournament problems that you cannot handle by simply making a rules interpretation. The problems that do arise often come from a misreading of the rules or of the manual. For example, some teachers do not allow the students to reshuffle the cards at the end of one game and go through the deck again. Many teachers complain that the students at the higher tables do not want to play the game again, so they provide extra resource material for those students to work with. Nevertheless, if at all possible, you should encourage students to play two or more games if they finish their first. However, make sure that while game scores are recorded after each game, tournament points are computed only once, at the end of the period; the maximum tournament points a player may earn is always six, no matter how many games are played. Although students should be allowed to play the game more than once, you should call time when it is obvious that the entire class has gone through the cards at least once and is not eager to continue.

Another frequent misreading of the TGT game rules involves challenges. If a student challenges and is wrong, he or she puts a previously won card (if any) *back in the deck*. Students never give one another cards they have won previously.

Sometimes students complain that some students had more chances than others to earn points because of their starting positions. This is a serious problem when some of the tables are getting 90-100% of the items correct, and one extra turn may determine the winner. To create a totally fair competition, first be sure that the number of items is a multiple of the number of players (e.g., 30 items for three players). For four-person tournament tables, simply remove a couple of number cards from the deck to get the correct multiple (e.g., 28 items for four players). Thus, for any table where all items are answered correctly, players will have an equal chance to win. When you call time to end the tournament, let any tables where everyone has not had an equal number of turns continue to play until everyone has had the same number of turns.

Occasionally a teacher will have some students who just cannot handle the competition. If this is a widespread problem, you should switch over to STAD. If it is a problem for only a few students, you might choose to withdraw a student from the competition, give him or her the game sheet as a quiz, and grade the quiz on a scale of two to six to correspond to a TGT score.

8. **Problems with STAD.** Problems with STAD are almost all problems with teams, discussed above. However, STAD has one additional problem. Because of the use of the individual improvement score system, some previously high-performing students (and occasionally their parents) complain that it is not fair that they have to do so much better to get the same points as a low-performing student. To answer this concern, emphasize the following:

A. The individual improvement score system is fair because in order to earn maximum points, everyone has to show improvement, not just do what they did before. Improving by ten points is just as hard for a low-per-

forming student as it is for a high-performing student.

B. Because there is a maximum of ten points possible, and because a perfect paper is always worth ten points, no student who has a low base score can earn a higher number of points than someone who gets the best possible quiz score.

C. Although team points are based on improvement, grades are still determined in the usual way. Thus, high-performing students who stay high in performance will still get high grades.

Another problem that arises with STAD is that occasionally, because a particular quiz is very difficult, almost everyone will get zero points. When this happens, you should give 1½ or 2 points per item, because it is unfair to penalize the entire class if the test is too difficult. Obviously, if large numbers of students keep performing below their base scores, the material being taught is above the level of the class and either the pace should be slowed or more appropriate material should be chosen.

9. **Problems with Jigsaw.** Team presentations in Jigsaw are so structured that little can go wrong with them, except that the students should be held to a firm time limit for each presentation so that they do not take up too much class time.

The expert groups are much less concretely structured, and thus more prone to problems. When students do not seem to be using their expert group time well, the general solution is to provide more structure.

Some teachers provide a set of discussion topics for expert groups and have the expert group leader call on students to contribute to each discussion. Another way to make the expert groups more effective is to have an aide, parent, or older student act as discussion leader. Also, you may be able to stagger the schedule of expert groups so that you can work with each. Most expert groups do not need this kind of help, but when students are either young or lack self-organization skills, some additional structure is needed.

Absenteeism is a special problem in Jigsaw because it is important for every team to have an expert on every topic. One way to deal with very serious absenteeism is to make six-member teams and have students work on each of three topics in pairs, so that at least one student is likely to appear for each topic. Another solution is to make the readings very short, so that students can read, discuss their topics in their expert groups, and take their quizzes all in the same period. Finally, you might reduce the number of topics to three, so that there are likely to be at least three students present to take the topics, and the problem of absent team members is averted.

10. **Scoring problems.** There are several things about scoring that teachers often find difficult or confusing.

Bumping in TGT is not usually a serious problem, except that you need to be prepared to reassign students if someone you assigned to a particular tournament table is absent. Also, new students should not be automatically assigned to the bottom of the bumping scheme. This would give them a considerable advantage until they are bumped "up" to the proper table. New students should be assigned to tables on the basis of some test or past grade.

Team scores also present few problems. Some teachers forget to prorate for teams larger or smaller than four members. This gives teams an unfair advantage or disadvantage; it is very important that the prorating be done.

The individual improvement score system used in STAD and Jigsaw II is not very difficult either, but mistakes do get made. It is essential to remember that the maximum improvement score is ten and that perfect quizzes get ten points no matter what the base score is. It is also essential to readjust base scores every two weeks. Not doing so is a serious problem, because if a base score was set too low or too high and is not changed, the student will have an unfair advantage or disadvantage. Some teachers give students zeros for skipping class or for some disciplinary problem. It is all right to give students zero *improvement points* toward their team score if they skip class, but these scores should never be counted as zeros in refiguring base scores; they should be considered blank for that purpose.

11. **Problems with too much work for teachers.** "Too much work" is the most frequently heard complaint about Student Team Learning from teachers, especially those who are making their own materials. However, there are some ways to reduce the work required.

One way is to use students to help with the scoring and newsletter writing. Responsibility for writing the newsletter could be passed from team to team, and volunteer students can come in after school to help score quizzes, calculate team scores, or do the bumping for TGT. Scoring quizzes is the biggest job in terms of teacher time, but it is also the easiest to get help with; students can either exchange papers in class or entire classes can exchange papers with one another. Volunteer students may also be used to make ditto masters and run off materials for the class.

If you are using the Johns Hopkins Team Learning Project materials, additional curriculum material is not difficult to make. However, it is a

bigger job if you are making materials from scratch. For this, the best arrangement is for teachers in the same department or same grade level to cooperate to make a set of materials, with each teacher taking responsibility for part of the curriculum. The outcome of this activity would be a central library of curriculum materials that all teachers can draw from. Existing worksheets and quizzes from previous years can also be incorporated into this library, and whenever a teacher adds a unit, it can be made available for his or her colleagues to use too.

OTHER STUDENT TEAM LEARNING TECHNIQUES

While the majority of teachers who use Student Team Learning in their classroms use STAD, TGT, Jigsaw, or some combination of these, many have seen the need for modifications of the basic techniques for particular purposes or special situations. Presented in this section are several of these special purpose techniques developed to meet special needs. The names and uses for these methods are summarized below:

Special Technique	*Application*
Student Team Learning and Individualization	All subjects in which homogeneous subgroups are used.
Student Team Learning and Mainstreaming	All subjects in which mainstreamed students are present.
Student Team Learning and Mastery Learning	All subjects. Use when it is important for students to master one skill before going on to the next.
Group Discussions and Group Projects	All subjects in which discussions or projects are used.
Pure Cooperation	All subjects. Use to avoid the competitive aspects of Student Team Learning.
Peer Evaluation-Student Teams (PEST)	Secondary English composition.
DICTATION	Elementary or secondary writing mechanics.
RUTABAGA	Elementary oral reading.
Full-Day Student Team Learning Model	All subjects.
Improvising	All subjects.

Student Team Learning and Individualization

In their basic forms, the Student Team Learning techniques (STAD, TGT, and Jigsaw) are class-paced instructional methods. That is, they are based on the assumption that the teacher is teaching the whole class the same material at the same time. Differences in student abilities and preparation are taken into account both in the use of peer tutoring, where students with more advanced skills help their lower-performing teammates, and in the use of improvement scores (STAD and Jigsaw II) or tournaments (TGT) which give students of all levels of past performance equal chances to be successful if they do their best. Individual attention from peers and the "individualized" reward system are one form of individualization, but many classes, especially at the elementary level, use individualization of instructional materials for students of different skill levels. This section discusses ways of using Student Team Learning in classrooms where the latter kind of individualization is used.

Individualization of instructional materials can take many forms. The most extreme form is true individualization, when each student works at his or her own pace on his or her own materials, as in programmed instruction, learning activity packages, and similar programs. The more commonly used form of individualization involves subgroups of students (such as "Bluebirds," "Redbirds," etc.), who study material within their groups that is different from that studied by other groups. These subgroups may be permanent or semi-permanent or they may be made up as the need arises.

If you only use individualization occasionally, and use whole-class instruction the rest of the time, simply use the basic Student Team Learning techniques during your whole-class instructional period and do not change your method of using individualized units. If you wish, you may include scores earned by students in their individualized work as part of their team scores. If you use true individualization exclusively, you would probably not want to use Student Team Learning at all, although work underway at Johns Hopkins University is attempting to combine Student Team Learning and programmed instruction.

If subgrouping is the primary way you organize your instruction, you may wish to use one of the strategies outlined below for adapting Student Team Learning.

Same-Ability Teams. If you use subgrouping (not true individualization) in your class, the easiest way to adapt Student Team Learning to your individualized program is to use same-ability teams. To do this, form teams from *within* each ability group, still trying to maintain whatever heterogeneity you can. For example, take a class of students with three reading groups: the Redbirds (10 students), the Bluebirds (14 students), and the Yellowbirds (6 students). You would assign students to teams to try to come as close as possible to four-member teams without having teams smaller than four. In this case you would have two Redbird teams (5 and 5), three Bluebird teams (5, 5 and 4) and one Yellowbird team (6). Within each ability group, you would try to balance the teams on ethnicity, sex, and past performance. This might mean that you would have different proportions of ethnicity and sex represented in each team. For example, there might be two black students and one girl on each Redbird team but

one black student and two girls on each Bluebird team.

Once the teams are made up, you would follow a schedule like that for STAD. You would assign base scores as usual, and for each unit you would present a lesson, then give students a chance to study worksheets in their teams, and finally give a quiz. Each team would have a goal of making a team average of six or more improvement points on the quiz. You might give token prizes to teams that make the six point average, or you might list these teams in a class newsletter. "Prizes" used by many teachers include class privileges such as extra recess or lining up first to go to lunch, pencils or comic books, and so on. Of course, to make this system fair, it is important to make the quizzes for the high ability groups as difficult for them as the quizzes for the low ability groups are for them.

The advantages of this same-ability team approach to subgroup individualization are that it is simple to administer and that it maintains the team as a group of equals who are there to master a set of materials together. The most serious disadvantage is that teams made up entirely of low ability students might not work well together. Also, TGT cannot be used with this technique, and it would be difficult to use if subgroups change frequently, as a change in ability groups would require a change in team assignments.

Mixed-Ability Teams. Another approach to using teams with subgrouping is to maintain the heterogeneous teams typical of Student Team Learning and to allow teammates to help one another on their different tasks. In the example from above, there might be a Redbird, two Bluebirds, and one Yellowbird on each team. The subgroups would receive instruction on materials appropriate to their needs separately (Redbirds with Redbirds, Bluebirds with Bluebirds, Yellowbirds with Yellowbirds), but after the initial presentation the students would go into their heterogeneous teams to master their own materials. At that time, students could help one another with the different tasks. That is, the more advanced students could help the less advanced ones with topics they would have covered previously. Following the team practice session, the students could either take quizzes as for STAD (a different quiz for each subgroup), or play games as in TGT, with the only difference being that students at Redbird tables would compete on Redbird materials, Bluebirds on Bluebird materials, and Yellowbirds on Yellowbird materials, and that the tournament tables for each subgroup would be treated separately — obviously students would not be "bumped" into a different subgroup. Scoring would be done as usual for both STAD (with base scores and improvement points computed as usual) and TGT. Jigsaw can also be used with mixed-ability teams by assigning easier topics to the lower-ability subgroups and harder ones to the higher ones.

The main advantage of the mixed-ability approach to subgroup individualization is that it maintains the heterogeneity of the teams, which is important both in making sure that every team has some students who are likely to keep the team on-task, and in allowing for development of positive relationships among students of different levels of past performance. Also, this approach permits the use of TGT and Jigsaw. The primary drawback is in the peer tutoring sessions. When Student Team Learning techniques are used in whole-class instruction or with same-ability teams in subgroup individualization, the peer tutoring within teams is between equals, all striving together to master the material. In the mixed-ability teams, one student is definitely the tutor and one the tutee. This difference in status can be humiliating to the tutee and can be less effective than peer tutoring between equals, because the tutor must spend time figuring out what the tutee needs to learn and then trying to decide how to help him or her learn it.

Student Team Learning and Mainstreaming

Some of the strongest effects of Student Team Learning techniques have been in breaking down barriers to friendship and positive interaction among students. Most of this research has focused on improving relationships among black, white, and Hispanic students. However, the principle which operates to produce the effects of Student Team Learning on interethnic relationships can be applied equally well to integrating mainstreamed students into regular classes, and recent research at the Center for Social Organization of Schools of The Johns Hopkins University has confirmed that Student Team Learning methods can help integrate mainstreamed students into the social system of the classroom while improving all students' academic performance.

Mainstreaming Students without Major Performance Deficits. Generally, mainstreaming does not involve putting together students with substantially different academic skills. This is often the case when physically handicapped students or sometimes when emotionally disturbed students are mainstreamed. However, even without large differences in performance, friendship and positive interaction frequently do not develop between the mainstreamed and non-mainstreamed students. Of course, this defeats much of the purpose of the mainstreaming, and it often leads

dents, for whom rejection by their peers is especially painful.

This is the situation in which Student Team Learning techniques are easiest to use. All the Student Team Learning techniques involve students working in cooperative teams. In these teams, students usually develop positive relationships even with students with whom they would ordinarily not associate. Teachers who have used Student Team Learning in such cases of mainstreaming, both with physically handicapped and emotionally disturbed students without major performance deficits, often report dramatic changes in peer acceptance of the mainstreamed students.

Common sense should dictate any adaptations that need to be made for the physically handicapped. If the handicapped student needs help in any way, a teammate should be appointed to help him or her. The students' handicaps should be dealt with in a matter-of-fact way; teammates should not ordinarily be given special instructions about what to do with their handicapped teammates except insofar as there are special allowances or assistance that are needed. What should be emphasized is that all team members have a contribution to make, regardless of who they are.

For emotionally disturbed students, again common sense is the rule. If the students are withdrawn, they should be assigned to teams with friendly students, and eased into the team activities. If they are disruptive, you may wish to have an aide or an older student sit in with the teams for the first several sessions until the difficult students are well integrated into the team activities.

Mainstreaming Students with Moderate Performance Deficits. Students whose level of academic performance is below that of the rest of the class but not substantially worse than the lowest-performing non-mainstreamed students can also be integrated into the classroom social structure using Student Team Learning. If aides or resource teachers work with these students during part of the day, it is a good idea to have them work with the students on the material they are studying in their teams. This gives these low performing students a special advantage in their teams and might even permit them to help their teammates with the academic material. If you are using TGT, these low performing students will of course be competing with other low performers, so they will have as good a chance as anyone to do well in the tournaments. In STAD or Jigsaw II, the individual improvement score system will give the mainstreamed students a chance to succeed that they would be unlikely to have in a traditional evaluation system.

Mainstreaming Students with Extreme Performance Deficits. Many cases of mainstreaming involve very low performing students in classes where the lowest performing non-mainstreamed student is still far above the mainstreamed student or students. In such cases it is unrealistic to expect the mainstreamed students to work on the same academic material as the rest of the class. Therefore, the mainstreamed students will have to earn points for their teams by doing well on materials separate from the regular curriculum. Team members can help the mainstreamed student study his or her materials, but the quiz for the mainstreamed student in this case would be completely different from the game or quiz for his or her teammates.

For example, take a class of thirty students with three mainstreamed students performing far below the class achievement level. While the class is studying multiplication of decimals, the mainstreamed students are doing individualized math units ranging from adding with renaming to beginning multiplication facts. Each week, the mainstreamed students would take a quiz on their own material. If the class is using TGT, the non-mainstreamed students would play the games to earn points for their teams; the mainstreamed students would take quizzes and earn six, four, or two points based on their individual quiz scores. To help them do well on the quizzes, the non-mainstreamed students would help their mainstreamed teammates prepare. In STAD or Jigsaw II, the same procedure would be followed, except that mainstreamed students could earn from zero to ten points on their quizzes.

Other considerations in using Student Team Learning techniques with very low performing mainstreamed students are the same as for mainstreaming students without major performance deficits. Whatever the situation, it is crucial to set a class tone of toleration, helping, and caring within teams, and to emphasize the importance of each student's contribution to the team score.

For more information on Student Team Learning and Mainstreaming, write to Marshall Leavey or Nancy Madden at the Center for Social Organization of Schools, The Johns Hopkins University, Baltimore, MD 21218.

Student Team Learning and Mastery Learning

Mastery Learning is a widely used technique for making sure that almost all students have mastered one skill before another is taught. It can be used in any subject, but is perhaps most appropriate in those subjects in which learning of one skill depends on mastery of a previous one, such as mathematics, reading, or foreign language.

The basic procedure for Mastery Learning involves setting clear goals, including both instructional objectives and standards of mastery; class presentations by the teacher; worksheet work or any other exercises designed to help students learn the material; and then a "formative" (diagnostic) quiz. If a preset percentage of the class (e.g. 90%) achieves a preset level of mastery (e.g. 90%), then the class goes on to the next skill. If these conditions are not met, corrective instruction is provided, and a "summative" (final) quiz is given. This process could continue to further quizzes until the 90% criterion is reached by 90% of the students, or until the teacher decides to go on to the next unit.

Mastery Learning, as described above, strongly resembles the basic schedule of Student Team Learning, especially STAD, except that STAD adds learning teams to the Mastery Learning model to help students master the material. Consequently, the two can be easily combined. In combining STAD and Mastery Learning, the team practice sessions are used to help students learn the material for the formative quiz and then during corrective instruction to help students who did not achieve mastery the first time to do so on the summative quiz. To use Student Team Learning and Mastery Learning, follow these steps:

1. Prepare curriculum materials as for STAD, except that you will need to make one additional quiz to use as a formative quiz.
2. Assign students to teams and give them initial base scores as for STAD.
3. At the beginning of each unit, tell students exactly what you will be studying and what level of mastery they will be expected to achieve. The criterion of mastery can be set by you based on whatever you feel represents complete understanding of the concept.
4. Introduce the unit.
5. Allow students to work on worksheets in their teams (as in STAD).
6. Give the formative quiz.
7. Correct the formative quiz. You may have students exchange papers and score the quizzes in class.
8. If 90% of the students score at the criterion you have set for mastery (usually 90% correct, e.g., 27 out of 30), count the formative quiz as though it were the summative quiz and go to step 12.
9. If fewer than 90% of the students achieve mastery, return the corrected quizzes to the students and go over the most frequently missed items. Then let the teams work with the members who did not achieve mastery to help them understand what they missed. If any entire teams achieve mastery, they may do other work.
10. After sufficient time for corrective instruction has been allowed, give students the summative quizzes. All students who did not get perfect formative quizzes should take the summative quizzes to see if they can improve their scores.
11. Correct the summative quizzes.
12. Figure individual and team scores based on the higher of the two quizzes (formative and summative). This should be done exactly as for STAD, with the individual improvement score system, except that students should receive five additional points if they achieve mastery, regardless of their base scores. Put the base scores, quiz scores, and improvement points on each student's returned quiz, and use that information to calculate team scores and write the newsletter as in STAD.

For more information on Mastery Learning, see Block, J. H and Anderson, L. W., *Mastery Learning in Classroom Instruction*. New York: MacMillan, 1975.

Group Discussion and Group Projects

The most commonly used cooperative learning method in most classrooms (other than the basic Student Team Learning methods) is simple group discussion and group projects. For example, most science teachers use cooperative lab groups, and many social studies and English teachers use discussion or project groups.

Whenever you are using Student Team Learning, you have already assigned students to small teams, so it is easy to use the same teams for discussions or projects as well. Many teachers use a mix of strategies. For example, a science teacher might use TGT or STAD to teach science information and vocabulary, Jigsaw for narrative material about science, and lab groups for lab work, all with the same teams. A social studies teacher might use TGT or STAD for geography and graph reading, Jigsaw for history, and discussion groups for modern problems, and so on.

Discussion Groups. The main task in setting up a discussion group is to make sure that each group member participates. If the group is to write a report, it is also very important for each group member to have a well-defined part of the task, so that all the work (and learning) does not fall on the shoulders of one group member.

For a discussion group, it is important to select a leader. The leader should be chosen for leader-

ship ability and organizational skills, *not* academic performance alone. The job of the leader should be defined as trying to be sure that everyone participates and that the group stays on-task.

One good way to get every team member to participate is to have each one write an opinion or an idea before the group starts discussing. For example, if the group is discussing capital punishment, you might have each student first write three advantages of capital punishment, three disadvantages, and his or her own opinion. The group members could then read their advantages and disadvantages to the group, and the discussion could focus on the lists that each student generated. The important part of this procedure is that if you force all students to state an opinion, they will have a commitment to the group discussion, and are much more likely to participate in it. Another way to insure participation is to make students experts on some part of the topic, as in Jigsaw, by having them do special research on their area of expertise. In the capital punishment discussion, one student could be an expert on the history of capital punishment, another on alternatives, another on research concerning its effects, and so on.

In addition to broad participation, another main task in setting up a group discussion is *focus*. Nothing is worse than a discussion with no aim. The job of the group should be clearly expressed. For example, the group could be charged to come to a group concensus on "Resolved: The United States Should Outlaw Strikes in Vital Industries," or "Resolved: The United States Should Not Have Entered World War I," with reasons for the positions taken. In these cases, it would be important to have a class discussion based on positions presented by each group.

If the group is to write a report, make sure that each student participates. The report itself could be broken into parts that different students write, or two students could do the research, a third the writing, and the fourth the editing, and so on.

Group Projects. The basic principle behind a good group project is the same as for a good discussion: get everyone to participate, and do not allow one or two students in each group to take all the responsibility. A group leader is as important for projects as for discussions, but again it should be emphasized that the leader's job is to get every group member to participate, not to be personally responsible for the outcome.

The best ways to get every group member to participate in a group project are the same as for a group report: either give each member a specific part of the task if the task can be subdivided, or give each member a part of the report to write or to present to the class. If group members do not each feel an individual responsibility for the group product, they are unlikely to participate fully.

If the group project can be divided into parts, you might specify the division at first, but then allow the groups to break the task down into subtasks as they wish. For example, you could simply assign a group the task of writing a report on the development of aviation, and let the students decide how to break it down for research and for presentation to the class.

For more information on group discussions and projects, see Sharan, S. and Sharan, Y., *Small-Group Teaching*. Englewood Cliffs, New Jersey: Educational Technology Publications, 1976.

Pure Cooperation

Some teachers do not like the competitive orientation of the basic Student Team Learning methods, feeling that they reinforce a tendency which is already all too strong in Western society to favor competition over cooperation. The developers of Student Team Learning are strongly committed to introducing cooperation into the classroom; that is the primary purpose of the program. However, experience has shown that students do not naturally cooperate well unless the success of the team is important to the team members. Competition among teams is the easiest way to make students value group success, but it is certainly not the only way. If you want to use a purely cooperative method, you may do so.

One way to avoid competitiveness but retain team incentives is to establish a set criterion for team reward or recognition. For example, in STAD or Jigsaw II, every team that got a combined average of six improvement points or better on a particular quiz could be listed in a newsletter or receive a reward.

Another way to get students to cooperate and entirely avoid points, quizzes, and newsletters is to spend some time teaching students how to cooperate, and then praising teams which cooperate well. If it is very clear to students that cooperation is what is expected of them, and if you consistently encourage and reward cooperation, students will cooperate. This works best with elementary school students, but can also be successful with junior and senior high school students when you have considerable rapport with and control over the class.

Finally, original Jigsaw is in some sense noncompetitive, although the students are working toward individual, competitive grades. The cooperation in original Jigsaw is produced because students depend absolutely on their teammates for information they need.

Pure cooperation can be made to work; it just takes more sensitivity on the part of the teacher and a better classroom situation than is needed for Student Team Learning with competition among teams. Properly done, however, pure cooperation can produce some of the same positive outcomes as those produced by STAD, TGT, and Jigsaw II even though the team competition, which those techniques use to motivate students to cooperate, is absent.

Peer Evaluation-Student Teams (PEST) Student Team Learning for English Composition

PEST was developed by Mary Pat Hall of the Virginia State Department of Education and her colleagues Patricia Kelly and Robert Small of Virginia Polytechnic Institute to teach English composition in secondary schools. Its purpose is to help students improve their composition skills by writing in teams, learning how to evaluate and improve one another's work, and then revising their compositions based on feedback from their teammates.

In its simplest form, PEST follows these procedures:

1. The teacher gives the students instructions or topics for paragraphs or short compositions. Examples of such assignments are comparison/contrast paragraphs, development of paragraphs by adding details, and so on.
2. Students write their paragraphs or short compositions individually. They then exchange papers with teammates.
3. The teammates rate the papers on a holistic evaluation form (shown below), using yes-no responses.

Holistic Evaluation Form for PEST (Paragraphs)

Style

1. The writer has a good sense of the audience for whom he or she is writing.
2. There is a consistent writer's voice.
3. Sentences are varied to the extent that there is not a monotonous repetition of certain patterns.

Content

1. The topic is narrow enough to be developed in one paragraph.
2. Sufficient supporting details are included.
3. All details relate to the main idea.
4. The details are clearly expressed.

Organization

1. There is a topic sentence.
2. The details that are included are well ordered.
3. Transitions are used to connect supporting information.
4. The paper ends naturally or is summarized effectively.

Mechanics

1. Spelling is correct.
2. Punctuation is correct.
3. Verb tense is correct.
4. The paper is free of fragments and run-on sentences.

The students who rate their teammates' papers are aware that the teacher will use exactly the same form to score the papers, so they are motivated to be careful and accurate in their evaluations.

4. When the teammates have rated each others' papers, they explain their ratings to the authors. The authors then revise their papers and hand them in to be scored.
5. The total number of "yesses" on the holistic evaluation given to each paper by the teacher is the score that the student contributes to his or her team. These scores can be added up directly or used with base scores as in STAD.

PEST is an excellent way to teach students to evaluate their own writing by evaluating that of their teammates, and to learn to write for revision. It also gives each student an "individual conference" to discuss his or her writing that would be otherwise difficult or impossible for the teacher.

One interesting variation of PEST is the use of a procedure in which each student writes a topic sentence and then passes the paper to the left. The second student writes a supporting detail, and passes again. The next student writes a second detail, and passes to the fourth student, who writes a concluding sentence. Then the student who wrote the topic sentence writes a smooth copy of the whole paragraph, and this is subjected to the peer and teacher evaluations described above.

For more information on PEST, write to Mary Pat Hall, Virginia State Department of Education, Regional Office, 900 Fairfax Street, Radford, VA 24141.

DICTATION — Student Team Learning for Writing Mechanics

DICTATION was developed by Louise Waynant of the Prince Georges County (MD) schools and J. Richard Lewis of the Frederick County (MD) schools to help students learn writing mechanics in the context of actual written material (as opposed to isolated sentences) by taking dictation.

To use DICTATION, follow these steps:

1. Assign students to teams as in STAD.
2. Select a passage from any source that illustrates the main concept you want to teach. For example, if you wanted to emphasize quotation marks, you might choose a passage with conversation in it.
3. Speaking slowly and clearly, dictate the passage to the students. Each student should write his or her own copy of the dictation.
4. Allow time for students to go over the passages in their teams. The goal for the team members is to explain the correct mechanics clearly enough so that each of them will be able to take the dictation perfectly when it is read again.
5. When students have had sufficient time to review each others' passages and prepare each other for the second reading, read the passage again.
6. You may either correct and score the papers yourself or allow students to do so. If you allow students to correct and score the passages, have students exchange papers, and either hand out a correct copy of the passage or show one on an opaque projector. Give students explicit instructions for how many points to deduct for each error.
7. Calculate team scores and write a class newsletter as for STAD.

For more information on DICTATION, contact J. Richard Lewis, Board of Education, Frederick County Schools, Frederick, MD 21701.

RUTABAGA — Student Team Learning for Oral Reading

RUTABAGA is a modification of TGT that is adapted to oral reading in the elementary grades, where students learn reading in homogeneous reading groups. Students are assigned to teams as in TGT. Because the teams are heterogeneous, each team will have students from different reading groups. There is no teacher-led instruction in RUTABAGA. During team practice time, students take turns reading to each other out of their respective texts in pairs or triads, gaining facility and ease in oral reading. Then, on tournament day, students are assigned to three- or four-member tournament tables as in TGT. However, no students are assigned to tables outside of their own reading groups. A small piece of masking tape is placed on each table where all students can reach it equally well. The students open their books to the section they practiced in their teams.

The first reader reads from the book. As the student reads, he or she leaves out a word of his or her choice and substitutes the word "rutabaga." At that point, the others at the table compete to put their hands on the tape (the "rutabaga"). The first to cover the tape with his or her hand fills in the missing word. If the student is right, he or she receives one point; if the student is wrong, he or she loses one point for guessing. The first reader may go for five "rutabagas," and then the student on his or her left becomes the reader. Because the reader cannot earn any points, it is important to make sure that by the end of the period each student has read an equal number of times. At the end of the period students tally their positive points and subtract their negative ones. The high scorer earns six points for his or her team, second place earns four points, etc., just as in TGT. RUTABAGA is great fun, and it gives students far more practice in oral reading than they would get in teacher-led reading groups. The structure is designed to motivate students to listen carefully to each other as well as to read frequently, and lets students read in a setting that is less threatening and more comfortable than the reading group. In combination with the usual diagnostic reading group, RUTABAGA may be an effective means of improving oral reading.

Full-Day Student Team Learning Model

Student Team Learning techniques can be used in combination with each other until they occupy a substantial portion of the school day. In a recent study (Slavin and Karweit, 1979) fifteen teachers of grades four and five used TGT in all of their mathematics classes, STAD in their language arts classes, and Jigsaw II in their social studies classes. Students were in as many as three different teams, and most of their instructional day for a semester was taken up with team activities. A single newsletter was prepared in each school to announce the results of all the team competitions. Teachers found the full-day model to be both workable and exciting. Many of them added team-related activities to their other subjects, such as science and reading. The students also greatly enjoyed the process and seemed just as motivated and interested in the last week of the semester as they had been in the first.

The study indicated that it is possible to change the classroom experience for elementary students from a competitive structure to a cooperative one over major portions of the school day. The Full-Day Student Team Learning Model made school a positive social experience for students, but also focused them clearly on learning goals and activities. There is no reason why many Student Team Learning techniques cannot be used at the same time at any level, elementary or secondary, and there is some indication that using more than

one technique enhances each by reinforcing the notion that cooperation is the dominant classroom mode.

Improvising — Making Your Own Student Team Learning Modifications

Once you have had some experience with Student Team Learning techniques, you may wish to improvise, to adapt team techniques to your own situation or needs. If you do, try to follow these basic principles:

1. Make sure you have some kind of recognition or reward for successful teams. The stronger the desire of team members to have their team be successful, the more likely it is that they will cooperate with and help one another to do well.
2. Make each student responsible for his or her own performance. That is, avoid team tasks in which there is a single "team product" that really could have been completed by one or two of the team members. We all remember being in "lab groups" that were supposed to prepare a single report — somehow, one student always wound up doing most of the work (and thus most of the learning). That is why the team scores in all of the Student Team Learning techniques are composed of the sum of individual performances on individual quizzes or games — *all* students must do well if the team is to do well, and the team knows which students need help and which have done the most to help the team.
3. Set up a scoring system that allows students of all performance levels to contribute meaningfully to the team scores or products. This is the purpose of the individual improvement score system in STAD and Jigsaw II, and the tournament system in TGT. There are two reasons for this. First, it is important to set up a system of rewards in which a student is likely to be rewarded for improving his or her level of performance over his or her usual level, so that all students are motivated to do their best. In traditional grading systems, some students are virtually guaranteed A's and B's, while others can rarely do so well no matter how hard they try. This results in decreased motivation for everyone. In a system that rewards *improvement* in performance rather than ability, every student can succeed or fail based on his or her own efforts. Second, a system that rewards improvement in performance is particularly important in a Student Team Learning technique, as it makes every team member's potential contribution large. This motivates team members to tutor the low performing students, who might otherwise be ignored because they are perceived as unlikely to contribute much to the team score anyway.

If you do make modifications in Student Team Learning techniques or if you develop new ones, please send a description to the Johns Hopkins Team Learning Project. We are in a continual process of revising and improving Student Team Learning techniques, and your ideas and experiences will certainly help us.

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CONVERTED TO ADJUSTED POINTS

Raw Score	Number of Items on Quiz: 8	10	12	15	20	25	Raw Score
1	4	3	3	2	2	1	1
2	8	6	5	4	3	2	2
3	11	9	8	6	5	4	3
4	15	12	10	8	6	5	4
5	19	15	13	10	8	6	5
6	23	18	15	12	9	7	6
7	26	21	18	14	11	8	7
8	30	24	20	16	12	10	8
9		27	23	18	14	11	9
10		30	25	20	15	12	10
11			28	22	17	13	11
12			30	24	18	14	12
13				26	20	16	13
14				28	21	17	14
15				30	23	18	15
16					24	19	16
17					26	20	17
18					27	22	18
19					29	23	19
20					30	24	20
21							
22						25	21
23						26	22
24						28	23
25						29	24
						30	25

For any other number of items, make your own chart using the following formula:

$$\text{adjusted score} = \frac{\text{Raw Score}}{\text{Total Possible}} \times 30$$

APPENDIX 2. PRORATING SCORES FOR TEAMS WITH TWO, THREE, OR FIVE MEMBERS

Raw Scores	Five-Member Team	Three-Member Team	Two-Member Team
4			8
5			10
6		8	12
7		9	14
8		11	16
9		12	18
10	8	13	20
11	9	15	22
12	10	16	24
13	11	17	26
14	12	19	28
15	12	20	30
16	13	21	32
17	14	23	34
18	14	24	36
19	15	25	38
20	16	27	40
21	17	28	
22	18	29	
23	18	31	
24	19	32	
25	20	33	
26	21	35	
27	22	36	
28	22	37	
29	23	39	
30	24	40	
31	25		
32	26		
33	26		
34	27		
35	28		
36	29		
37	30		
38	30		
39	31		
40	32		
41	33		
42	35		
43	34		
44	35		
45	36		
46	37		
47	38		
48	38		
49	39		
50	40		

APPENDIX 3. CALCULATING NEW BASE SCORES

To find the new base score, add the student's two quiz scores together, and find the total in the column to the left. Find the student's old base score at the top. Follow the row across and the column down until you come to where they intersect. This number is the student's new base score.

Total of Quiz Scores	Old Base Score 3	4	5	6	7	8	9	10	11	12	13
16	3	3	4	4	4	5	5	5	6	6	6
17	3	4	4	4	5	5	5	6	6	6	7
18	4	4	4	5	5	5	6	6	6	7	7
19	4	4	5	5	5	6	6	6	7	7	7
20	4	5	5	5	6	6	6	7	7	7	8
21	5	5	5	6	6	6	7	7	7	8	8
22	5	5	6	6	6	7	7	7	8	8	8
23	5	6	6	6	7	7	7	8	8	8	9
24	6	6	6	7	7	7	8	8	8	9	9
25	6	6	7	7	7	8	8	8	9	9	9
26	6	7	7	7	8	8	8	9	9	9	10
27	7	7	7	8	8	8	9	9	9	10	10
28	7	7	8	8	8	9	9	9	10	10	10
29	7	8	8	8	9	9	9	10	10	10	11
30	8	8	8	9	9	9	10	10	10	11	11
31	8	8	9	9	9	10	10	10	11	11	11
32	8	9	9	9	10	10	10	11	11	11	12
33	9	9	9	10	10	10	11	11	11	12	12
34	9	9	10	10	10	11	11	11	12	12	12
35	9	10	10	10	11	11	11	12	12	12	13
36	10	10	10	11	11	11	12	12	12	13	13
37	10	10	11	11	11	12	12	12	13	13	13
38	10	11	11	11	12	12	12	13	13	13	14
39	11	11	11	12	12	12	13	13	13	14	14
40	11	11	12	12	12	13	13	13	14	14	14
41	11	12	12	12	13	13	13	14	14	14	15
42	12	12	12	13	13	13	14	14	14	15	15
43	12	12	13	13	13	14	14	14	15	15	15
44	12	13	13	13	14	14	14	15	15	15	16
45	13	13	13	14	14	14	15	15	15	16	16
46	13	13	14	14	14	15	15	15	16	16	16
47	13	14	14	14	15	15	15	16	16	16	17
48	14	14	14	15	15	15	16	16	16	17	17
49	14	14	15	15	15	16	16	16	17	17	17
50	14	15	15	15	16	16	16	17	17	17	18
51	15	15	15	16	16	16	17	17	17	18	18
52	15	15	16	16	16	17	17	17	18	18	18
53	15	16	16	16	17	17	17	18	18	18	19
54	16	16	16	17	17	17	18	18	18	19	19
55	16	16	17	17	17	18	18	18	19	19	19
56	16	17	17	17	18	18	18	19	19	19	20
57	17	17	17	18	18	18	19	19	19	20	20
58	17	17	18	18	18	19	19	19	20	20	20
59	17	18	18	18	19	19	19	20	20	20	21
60	18	18	18	19	19	19	20	20	20	21	21

Total of Quiz Scores	Old Base Score 14	15	16	17	18	19	20	21	22	23	24	25
16	7	7	7	8	8	8	9	9	9	10	10	10
17	7	7	8	8	8	9	9	9	10	10	10	11
18	7	8	8	8	9	9	9	10	10	10	11	11
19	8	8	8	9	9	9	10	10	10	11	11	11
20	8	8	9	9	9	10	10	10	11	11	11	12
21	8	9	9	9	10	10	10	11	11	11	12	12
22	9	9	9	10	10	10	11	11	11	12	12	12
23	9	9	10	10	10	11	11	11	12	12	12	13
24	9	10	10	10	11	11	11	12	12	12	13	13
25	10	10	10	11	11	11	12	12	12	13	13	13
26	10	10	11	11	11	12	12	12	13	13	13	14
27	10	11	11	11	12	12	12	13	13	13	14	14
28	11	11	11	12	12	12	13	13	13	14	14	14
29	11	11	12	12	12	13	13	13	14	14	14	15
30	11	12	12	12	13	13	13	14	14	14	15	15
31	12	12	12	13	13	13	14	14	14	15	15	15
32	12	12	13	13	13	14	14	14	15	15	15	16
33	12	13	13	13	14	14	14	15	15	15	16	16
34	13	13	13	14	14	14	15	15	15	16	16	16
35	13	13	14	14	14	15	15	15	16	16	16	17
36	13	14	14	14	15	15	15	16	16	16	17	17
37	14	14	14	15	15	15	16	16	16	17	17	17
38	14	14	15	15	15	16	16	16	17	17	17	18
39	14	15	15	15	16	16	16	17	17	17	18	18
40	15	15	15	16	16	16	17	17	17	18	18	18
41	15	15	16	16	16	17	17	17	18	18	18	19
42	15	16	16	16	17	17	17	18	18	18	19	19
43	16	16	16	17	17	17	18	18	18	19	19	19
44	16	16	17	17	17	18	18	18	19	19	19	20
45	16	17	17	17	18	18	18	19	19	19	20	20
46	17	17	17	18	18	18	19	19	19	20	20	20
47	17	17	18	18	18	19	19	19	20	20	20	21
48	17	18	18	18	19	19	19	20	20	20	21	21
49	18	18	18	19	19	19	20	20	20	21	21	21
50	18	18	19	19	19	20	20	20	21	21	21	22
51	18	19	19	19	20	20	20	21	21	21	22	22
52	19	19	19	20	20	20	21	21	21	22	22	22
53	19	19	20	20	20	21	21	21	22	22	22	23
54	19	20	20	20	21	21	21	22	22	22	23	23
55	20	20	20	21	21	21	22	22	22	23	23	23
56	20	20	21	21	21	22	22	22	23	23	23	24
57	20	21	21	21	22	22	22	23	23	23	24	24
58	21	21	21	22	22	22	23	23	23	24	24	24
59	21	21	22	22	22	23	23	23	24	24	24	25
60	21	22	22	22	23	23	23	24	24	24	25	25

APPENDIX 4. INSTRUCTIONS FOR MAKING YOUR OWN WORKSHEETS GAMES/QUIZZES (STAD and TGT)

Making curriculum materials for STAD or TGT is very much like making worksheets and quizzes for any instructional unit. In fact, you may use any worksheets and quizzes you already have, or you may take items from other sources instead of creating entirely new worksheets and quizzes.

To make materials for STAD or TGT, follow these steps:

1. Make A Worksheet and A Worksheet Answer Sheet for Each Unit. A worksheet is usually a series of items that provide students with practice and self-assessment that will directly help them prepare for the quiz (STAD) or game (TGT) to follow. The number of worksheet items to make depends on the kind of material you are teaching. For short-answer items, such as irregular verb tenses, multiplication facts, or multiple choice questions, you would probably make a longer worksheet than for a unit in which each item takes a long time to do, as in a long division unit. The Johns Hopkins Team Learning Project curriculum materials always use thirty-item worksheets, but there is no particular reason to make that exact number of items. Also, note that a set of items is not the only possible kind of worksheet. For example, in a geography unit the students could be asked to fill in country names on a blank map, and a math facts or spelling unit might use flash cards instead of a worksheet. The main idea is to be sure that the worksheet provides *direct* practice for the quiz or game. For example, a crossword puzzle might give students some help with a spelling test, but it does not give them the kind of drill and practice that will enable them to master the spelling words. As such, a crossword puzzle could be used as a supplementary activity, but should not be used to replace a worksheet or flash cards that do directly prepare students for a spelling test.

Appendix 4, continued

As soon as you have made a worksheet, also make a worksheet answer sheet. Students will use this answer sheet to check themselves as they study.

2. Make A Game/Quiz and A Game/Quiz Answer Sheet for Each Unit. The same sheet is used as a game in TGT and a quiz in STAD. The game/quiz items should closely parallel the worksheet items. In fact, you may wish to develop the worksheet and the game/quiz at the same time, making each worksheet item parallel to each corresponding game/quiz item. Some examples of parallel items appear below.

Worksheet	*Game/Quiz*
1. $\frac{1}{2} + \frac{1}{2} =$	1. $\frac{1}{3} + \frac{1}{3} =$
2. The car crept _____ up the hill. a. slow b. slowly	2. Even though he was nervous, he got a _____ score on the test. a. good b. well
3. A combination of hydrogen and fluorine would be written . . . a. H_2F b. HF c. HF_2 d. H_2F_2	3. A combination of calcium and chlorine would be written . . . a. Ca_2Cl b. CaCl c. $CaCl_2$ d. Ca_2Cl_2
4. The capital of Canada is _____.	4. The capital of Canada is _____.

Note that in questions 1-3, the parallel items tested the same skill or concept (addition of simple fractions with like denominators, correct use of adjectives/adverbs, writing chemical formulas with elements of different valences) but used different items. This avoids the possibility that students will memorize the *items* instead of learning the *concepts*. However, in item 4, the task is to memorize capitals of countries, so it is appropriate to give the same item twice, and it would of course be unfair to have a capital on the game/quiz that did not appear on the worksheet.

The number of items on the game/quiz should ordinarily be thirty. This corresponds to the number of cards used in TGT or to the number on which the individual improvement score system of STAD is based. However, you may of course use shorter or longer games/quizzes if you wish. For TGT, you may use any number of items up to thirty by having students remove number cards for which there are no items. For STAD, you should use quizzes with a number of items that divides evenly into thirty. For example, if you give a fifteen-item quiz, you could give two points per correct answer, and you could avoid having to use Appendix 1 to transform scores. If the number of items on your quiz does not divide evenly into thirty, you may use Appendix 1 to transform quiz scores.

You will need to make a game/quiz answer sheet for TGT, so that students can check themselves during the game. For STAD, you will need a correction key. If you are allowing students to correct each others' papers, you could put the answers on an overhead projector sheet or a large piece of paper to show the class, although most teachers simply read the answers to the students for correction.

Two representative units (worksheets, worksheet answers, game/quiz, and game/quiz answers) are reproduced below.

UNIT II: LANGUAGE MECHANICS

Parts of Speech: Adverbs and Adjectives
Worksheet II.1.4.4

Objective: Use adverbs and adjectives in sentences correctly.

Instructions: This worksheet will help you prepare for the Parts of Speech: Adverbs and Adjectives Game/Quiz II.1.4.4. Decide whether you need an adverb or an adjective to complete the sentence correctly. Circle the correct choice.

Examples: The old man walked _____

slow
(slowly)

The _____ dog wagged its tail.

(happy)
happily

Worksheet II.1.4.4

He sat _____ through the trial. a) calm b) calmly 1	Drink the coffee _____. a) careful b) carefully 2	He denied the charge _____. a) angry b) angrily 3
The room was _____. a) noisy b) noisily 4	David seemed _____ with his grade. a) happy b) happily 5	Kathy was _____ when she lost her sweater. a) sad b) sadly 6
He did _____ on the test. a) bad b) badly 7	The family sat _____ while he explained the problems. a) quiet b) quietly 8	She picked up the egg _____. a) gentle b) gently 9

Worksheet II.1.4.4, continued

Mark cried _____ when his best friend moved away. a) bitter b) bitterly 10	The room was _____ lit. a) dim b) dimly 11	The rain fell _____ on the window pane. a) soft b) softly 12
Drive _____! a) safe b) safely 13	The _____ girl had no money for candy. a) poor b) poorly 14	Anna is _____ of her aunt. a) fond b) fondly 15
He swims _____. a) awkward b) awkwardly 16	Dan is a _____ runner. a) swift b) swiftly 17	Go up the stairs _____. a) slow b) slowly 18
Doesn't the little bush look _____ next to the big one? a) strange b) strangely 19	Do the task _____. a) slow b) slowly 20	The candy tasted _____. a) sweet b) sweetly 21
Dan runs _____. a) swift b) swiftly 22	David and Russ walked to school _____. a) quick b) quickly 23	The _____ children climbed into bed. a) sleepy b) sleepily 24
She looked at her report card _____. a) sad b) sadly 25	Robert was _____ to start. a) eager b) eagerly 26	Those flowers smell _____. a) nice b) nicely 27
He looked _____ about the news. a) cheerful b) cheerfully 28	The old woman laughed _____. a) loud b) loudly 29	The boy was doing very _____. a) good b) well 30

APPENDIX 4, continued

Worksheet Answer Sheet

II.1.4.4 - Adverbs and Adjectives

1. calmly
2. carefully
3. angrily
4. noisy
5. happy
6. sad
7. badly
8. quietly
9. gently
10. bitterly
11. dimly
12. softly
13. safely
14. poor
15. fond
16. awkwardly
17. swift
18. slowly
19. strange
20. slowly
21. sweet
22. swiftly
23. quickly
24. sleepy
25. sadly
26. eager
27. nice
28. cheerful
29. loudly
30. well

Unit II: Language Mechanics

Adverbs and Adjectives Game/Quiz II.1.4.4.

1 He sat _____ through the trial. a) calm b) calmly	11 The room was _____ lit. a) dim b) dimly	21 My friend looked _____. a) angry b) angrily
2 Drink the coffee _____. a) careful b) carefully	12 The rain fell _____ on the window pane. a) soft b) softly	22 The old man was very _____. a) glad b) gladly
3 He denied the charge _____. a) angry b) angrily	13 She looked at the young fawns _____. a) close b) closely	23 The fire burned _____. a) fierce b) fiercely
4 The room was _____. a) noisy b) noisily	14 They all grinned _____. a) shy b) shyly	24 We must measure this _____. a) exact b) exactly
5 She was _____ after the long run. a) breathless b) breathlessly	15 The gift was given _____. a) free b) freely	25 Robert was _____ to start. a) eager b) eagerly
6 The dog is _____ now. a) hungry b) hungrily	16 I have never been so _____ treated. a) cold b) coldly	26 Those flowers smell _____. a) nice b) nicely

7 The children behaved _____. a) polite b) politely	17 Dan is a _____ runner. a) swift b) swiftly	27 He looked _____ about the news. a) cheerful b) cheerfully
8 I will be with you _____. a) short b) shortly	18 Go up the stairs _____. a) slow b) slowly	28 The old woman laughed _____. a) loud b) loudly
9 She picked up the egg _____. a) gentle b) gently	19 Doesn't the little bush look _____ next to the big one? a) strange b) strangely	29 This job must be done _____. a) careful b) carefully
10 Mark cried _____ when his best friend moved away. a) bitter b) bitterly	20 Do the task _____. a) slow b) slowly	30 Tie the knot _____. a) loose b) loosely

Game/Quiz Answer Sheet
II.1.4.4 - Adverbs and Adjectives

1. calmly
2. carefully
3. angrily
4. noisy
5. breathless
6. hungry
7. politely
8. shortly
9. gently
10. bitterly
11. dimly
12. softly
13. closely
14. shyly
15. freely
16. coldly
17. swift
18. slowly
19. strange
20. slowly
21. angry
22. glad
23. fiercely
24. exactly
25. eager
26. nice
27. cheerful
28. loudly
29. carefully
30. loosely

Worksheet: Rounding to nearest ten, hundred, or thousand

1. Round 36 to the nearest ten _____
2. Round 84 to the nearest ten _____
3. Round 77 to the nearest ten _____
4. Round 41 to the nearest ten _____
5. Round 29 to the nearest ten _____
6. Round 388 to the nearest hundred _____
7. Round 721 to the nearest hundred _____
8. Round 849 to the nearest hundred _____
9. Round 201 to the nearest hundred _____
10. Round 897 to the nearest hundred _____
11. Round 765 to the nearest hundred _____
12. Round 1,099 to the nearest thousand _____
13. Round 4,679 to the nearest thousand _____
14. Round 5,376 to the nearest thousand _____
15. Round 2,837 to the nearest thousand _____
16. Round 69 to the nearest ten _____
17. Round 11 to the nearest ten _____
18. Round 26 to the nearest ten _____
19. Round 76 to the nearest ten _____
20. Round 561 to the nearest hundred _____
21. Round 251 to the nearest hundred _____
22. Round 341 to the nearest hundred _____
23. Round 987 to the nearest hundred _____
24. Round 238 to the nearest hundred _____
25. Round 499 to the nearest hundred _____
26. Round 4,099 to the nearest thousand _____
27. Round 1,568 to the nearest thousand _____
28. Round 2,701 to the nearest thousand _____
29. Round 2,820 to the nearest thousand _____
30. Round 6,834 to the nearest thousand _____

Worksheet: Rounding to nearest ten, hundred, or thousand
Answer Sheet

1. 40
2. 80
3. 80
4. 40
5. 30
6. 400
7. 700
8. 800
9. 200
10. 900
11. 800
12. 1000
13. 5000
14. 5000
15. 3000
16. 70
17. 10
18. 30
19. 80
20. 600
21. 300
22. 300
23. 1000
24. 200
25. 500
26. 4000
27. 2000
28. 3000
29. 3000
30. 7000

APPENDIX 4, continued

Game/Quiz: Rounding to nearest ten, hundred, or thousand

1. Round 62 to the nearest ten _____
2. Round 47 to the nearest ten _____
3. Round 11 to the nearest ten _____
4. Round 89 to the nearest ten _____
5. Round 99 to the nearest ten _____
6. Round 562 to the nearest hundred _____
7. Round 993 to the nearest hundred _____
8. Round 116 to the nearest hundred _____
9. Round 375 to the nearest hundred _____
10. Round 2,786 to the nearest hundred _____
11. Round 9,264 to the nearest hundred _____
12. Round 5,600 to the nearest thousand _____
13. Round 1,380 to the nearest thousand _____
14. Round 9,176 to the nearest thousand _____
15. Round 15,780 to the nearest thousand _____
16. Round 81 to the nearest ten _____
17. Round 68 to the nearest ten _____
18. Round 31 to the nearest ten _____
19. Round 12 to the nearest ten _____
20. Round 405 to the nearest hundred _____
21. Round 780 to the nearest hundred _____
22. Round 475 to the nearest hundred _____
23. Round 520 to the nearest hundred _____
24. Round 310 to the nearest hundred _____
25. Round 5,286 to the nearest hundred _____
26. Round 4,112 to the nearest thousand _____
27. Round 5,784 to the nearest thousand _____
28. Round 15,102 to the nearest thousand _____
29. Round 9,416 to the nearest thousand _____
30. Round 8,119 to the nearest thousand _____

Game/Quiz: Rounding to nearest ten, hundred, or thousand

Answer Sheet

1. 60
2. 50
3. 10
4. 90
5. 100
6. 600
7. 900
8. 100
9. 400
10. 2,800
11. 9,300
12. 6,000
13. 1,000
14. 9,000
15. 16,000
16. 80
17. 70
18. 30
19. 10
20. 400
21. 800
22. 500
23. 500
24. 300
25. 5,300
26. 4,000
27. 6,000
28. 15,000
29. 9,000
30. 8,000

APPENDIX 5. SAMPLE JIGSAW II UNIT

This appendix contains a complete Jigsaw II Unit. It is based on the Introduction to this manual for the sake of illustration. Before you use Jigsaw II you might use this unit with other teachers to get a student's eyeview of the technique.

The expert sheet appears below. If you are simulating Jigsaw II, assign yourself to a team, pick one of the four topics and then re-read the Introduction. Then discuss the topic with your "expert group," return to your team to report on your topic, and take the quiz. The quiz answers are as follows: *c b a b a c d d.*

Expert Sheet

To read: The Introduction to this manual

Topics:

1. What are the principal features of STAD, TGT, and Jigsaw?
2. What has the research on Student Team Learning found?
3. Why do the Student Team Learning techniques produce the effects that they do?
4. What are some of the reasons that teachers might adopt one of the Student Team Learning techniques?

Quiz: Student Team Learning

1a. What is the main difference between STAD and TGT?
- a) STAD is less expensive to use than TGT.
- b) STAD is used mostly in social studies, TGT in mathematics and language arts.
- c) STAD uses quizzes, TGT uses instructional games.
- d) STAD uses practice worksheets, TGT does not.

1b. What do TGT and Jigsaw have in common?
- a) Expert groups
- b) Heterogeneous teams
- c) Quizzes
- d) Instructional games

2a. Which of the Student Team Learning techniques has been evaluated in the largest number of studies?
- a) TGT
- b) STAD
- c) Jigsaw

2b. Which of the following is the most consistent finding for all Student Team Learning techniques?
- a) Improved attitudes
- b) Improved intergroup relations
- c) Increased self-esteem
- d) Increased satisfaction

3a. Which of the following is a reason implied in the Introduction for effects of team techniques on learning? learning?
- a) Peer support for academic performance
- b) Effectiveness of peer tutoring
- c) Increased mutual concern
- d) Improved student attitudes

APPENDIX 5, continued

3b. Which is *not* a reason implied in the Introduction for the effects of Student Team Learning on positive intergroup relations?

a) Students in multiethnic teams must interact.
b) Teams in general increase mutual concern among teammates.
c) Students in multiethnic teams learn about each other cultures.
d) Students in multiethnic teams learn to help one another.

4a. Which is *not* a reason that a teacher might adopt Student Team Learning techniques?

a) Team techniques allow the teacher to be a facilitator rather than a director.
b) Team techniques improve student learning, positive intergroup relations, and other dimensions.
c) Team techniques provide an effective classroom management system.
d) Team techniques take less time than traditional techniques.

4b. Which traditional classroom activity do STAD and TGT replace most effectively?

a) Teacher lectures
b) Supplementary activities
c) Homework
d) Drill

TEAM SUMMARY SHEET

Team Name _____

Team Members	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Total Team Score														
Transformed Team Score														
Team Standing This Week														
Cumulative Score														
Cumulative Standing														

QUIZ SCORE SHEET (STAD and Jigsaw II)

	Date:			Date:			Date:		
	Quiz:			Quiz:			Quiz:		
Student	Base Score	Quiz Score	Improvement Points	Base Score	Quiz Score	Improvement Points	Base Score	Quiz Score	Improvement Points

TOURNAMENT TABLE ASSIGNMENT SHEET (TGT)

Tournament Number:

Student	Team	1	2	3	4	5	6	7	8	9	10	11	12	13

TABLE #______ GAME SCORE SHEET (TGT) ROUND #______

PLAYER	TEAM	Game 1	Game 2	Game 3	DAY'S TOTAL	TOURNAMENT POINTS

TABLE #______ GAME SCORE SHEET (TGT) ROUND #______

PLAYER	TEAM	Game 1	Game 2	Game 3	DAY'S TOTAL	TOURNAMENT POINTS

TABLE #______ GAME SCORE SHEET (TGT) ROUND #______

PLAYER	TEAM	Game 1	Game 2	Game 3	DAY'S TOTAL	TOURNAMENT POINTS

TABLE #______ GAME SCORE SHEET (TGT) ROUND #______

PLAYER	TEAM	Game 1	Game 2	Game 3	DAY'S TOTAL	TOURNAMENT POINTS